Inside: Drop Those CIO Stereotypes | IT Education on a Budget | The Rise of Consumer Tech

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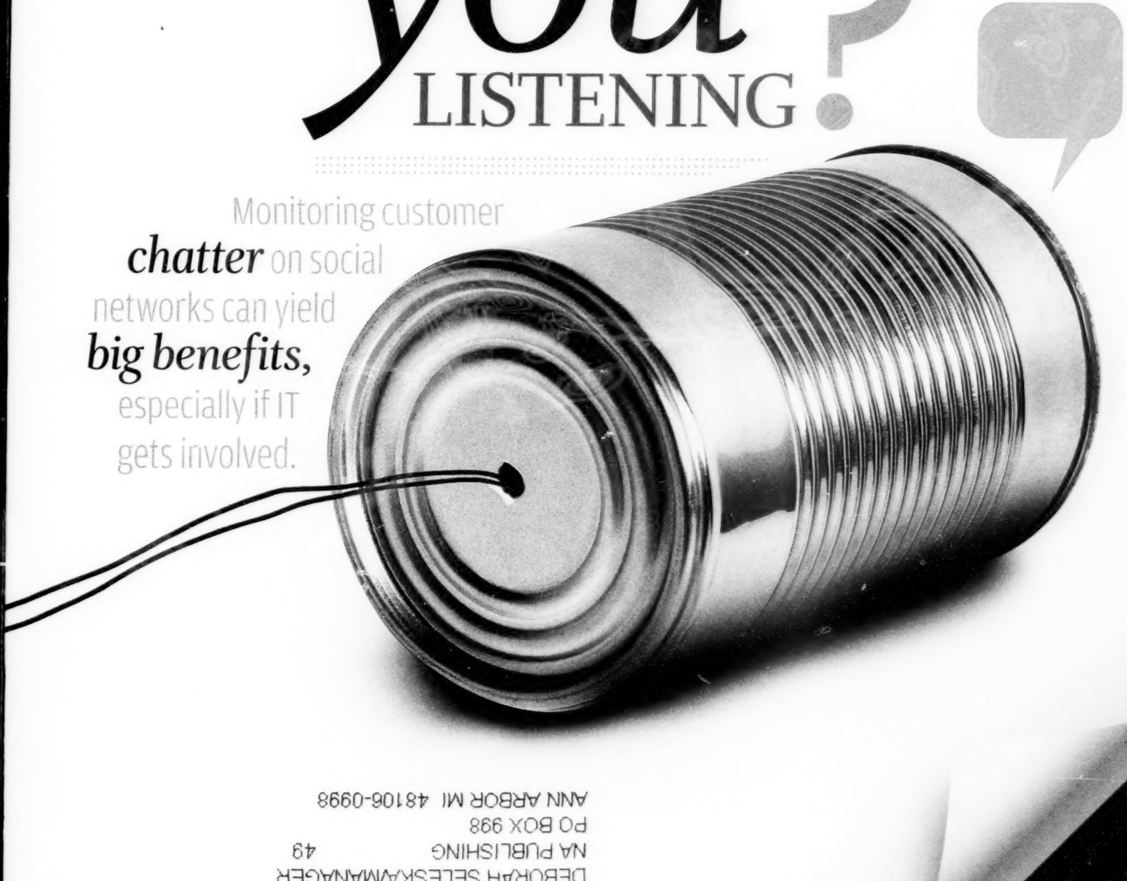

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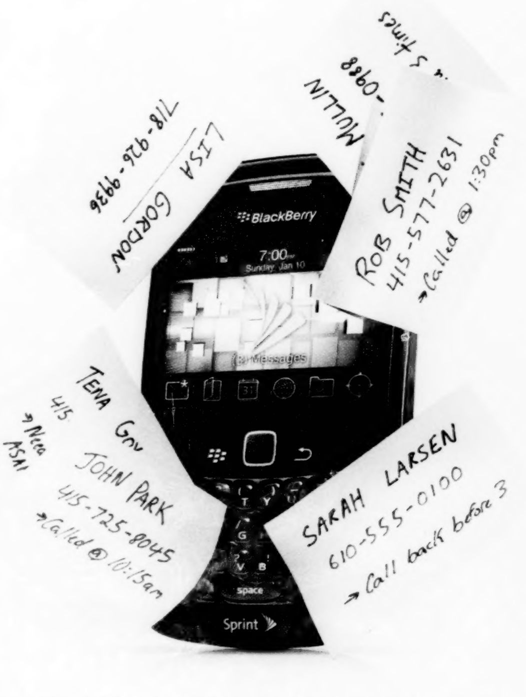
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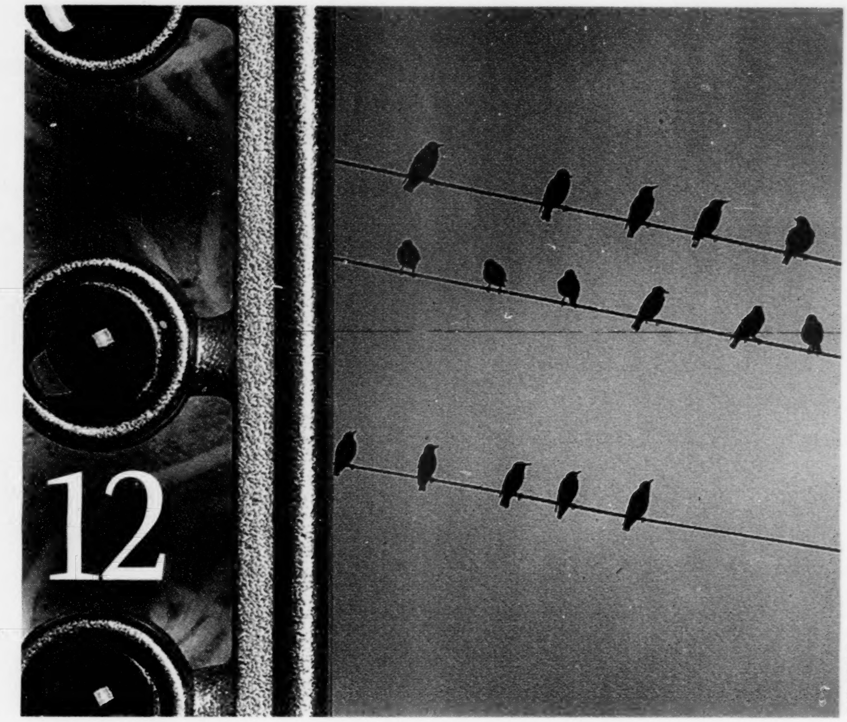

JOHN WEBER

COVER STORY

Are You Listening?

12 Monitoring customer chatter on social networks such as Twitter can yield big business benefits, especially if IT integrates social CRM with other systems.

IT Education On a Budget

16 With unprecedented federal backing and rising enrollments, community colleges are taking center stage with adaptable and affordable education tuned to the IT industry's labor needs.

Steer Clear of Consolidation Potholes

20 Successful server-consolidation projects require lots of upfront research and careful attention to details such as configuration, compatibility and scalability.

HEADS UP

2 Las Vegas data center is **low on glitz.** | **E-health flaws** could increase legal **liability.** | **3 Intel** lab to focus on **human side** of IT. | **Chicago school** adds **predictive analytics** center.

NEWS ANALYSIS

4 City aims for **easy ERP** plan. | **5 Feds** pull the plug on **funding** for IT projects.

OPINIONS

10 Thornton A. May comes to the defense of CIOs. | **25 Bart Perkins** says you should be using mapping data. | **32 Scot Finnie** wonders how many IT shops are prepared for the consumerization of technology.

DEPARTMENTS

6 The Grill: Energy efficiency expert Jonathan Koomey. | **24 Security Manager's Journal:** E-mail shortcut sounds alarm. | **26 Career Watch** | **31 Shark Tank**

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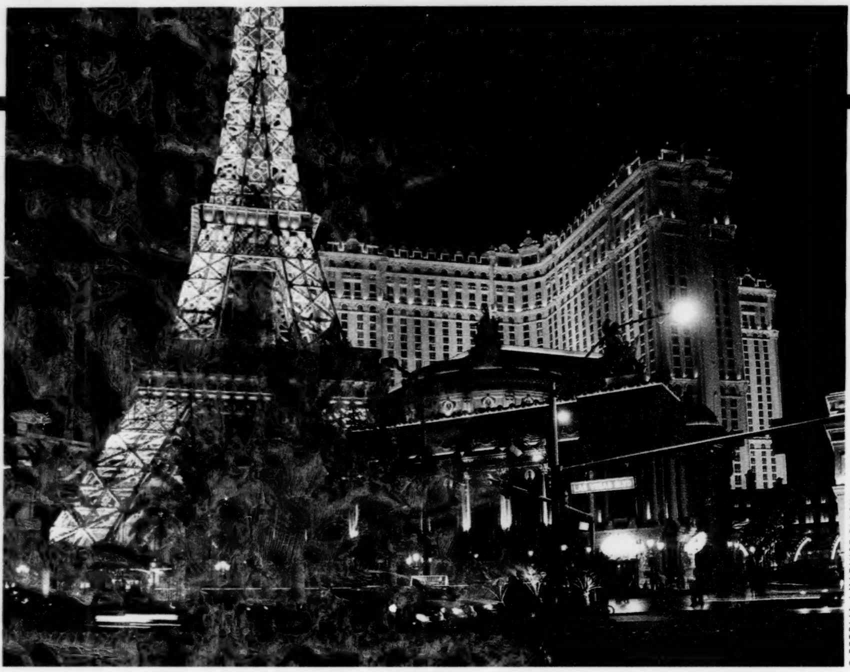

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SITE VISIT

Las Vegas Data Center Is Low on Glitz

A **FIRST-TIME VISITOR** to the data center of a Las Vegas casino might expect it to look like the one featured in the movie *Ocean's Eleven*: gleaming corridors with mysterious lighting and sophisticated sensors capable of detecting an intruder's pulse rate.

But Steve Vollmer, chief technology officer and vice president of IT at Las Vegas Sands Corp., quickly dashed those expectations on a recent tour of the data center that runs The Venetian resort and casino.

It's just "another data center," Vollmer said, except that part of its mission is to run strictly regulated gambling operations.

Like many businesses, Sands is moving its worldwide operations to IP for everything connected to a network — telephones, televisions and even slot machines.

What's the advantage of having slots on IP? It's the transaction speed, Vollmer said. Every action on a slot machine is recorded, producing a small amount of data that is sent to the server. "We know exactly what's in that slot machine right now," Vollmer said.

Winners and losers on a slot machine are determined by algorithms — inside the machine itself — that generate millions of random numeric combinations, he explained. A slot machine is essentially a PC running a "very hardened Unix-type code," he added.

One person on the tour asked about the sophisticated penny slot machines, noting that he had won $7 on one of them. Hearing this, Vollmer smiled and delivered the eternal Vegas truth: "We'll get it back."

– Patrick Thibodeau

MEDICAL RECORDS

E-health Flaws Could Increase Legal Liability

It's well known that people have concerns about the security and privacy of electronic health records. But two Case Western Reserve University professors say the systems could also increase liability risks for health care providers because of possible software defects or user errors.

The professors – Sharona Hoffman and her husband, Andy Podgurski – have previously called for federal regulatory oversight of electronic health record systems. In their latest article, published in the *Berkeley Technology Law Journal*, they contend that health care providers could face malpractice claims and lawsuits if their systems contain software bugs or are too complicated, or if training for users is insufficient.

"If a computer problem causes an error in somebody's drug prescription, medication dosage or surgical procedure, that can be catastrophic," Hoffman said in a statement released by the university last month.

Whether or not there is a software bug, Podgurski added, "the usability of the system may be lacking, and that may lead a user to make mistakes that have safety implications."

The authors also note that system purchasers may never know about product flaws, because no regulation requires the disclosure of such problems and some vendor contracts even prohibit it.

– MITCH BETTS

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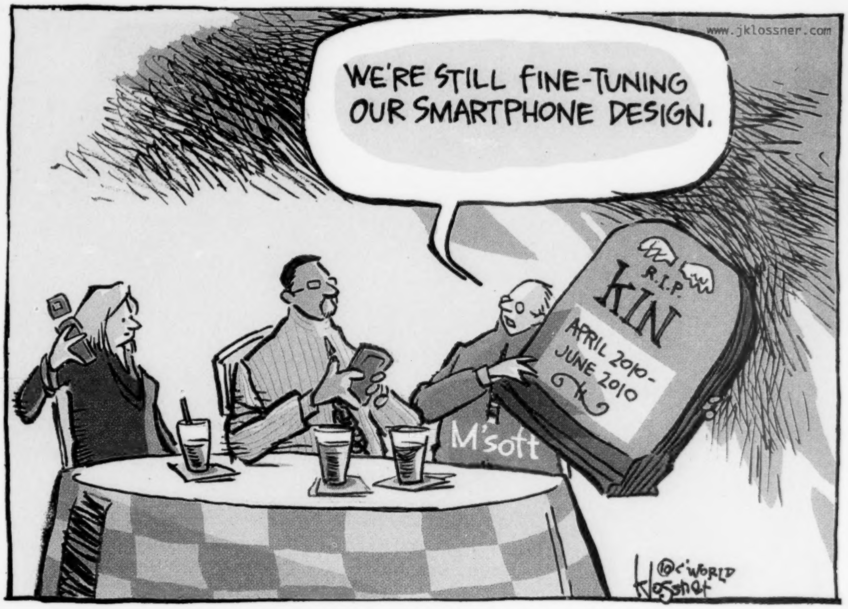
BETWEEN THE LINES
By John Klossner



FUTURE WATCH

Intel Lab to Focus on Human Side of IT

INTEL CORP. is creating a new research lab dedicated to figuring out how people want to use computers in the future.

Justin Rattner, Intel's chief technology officer, announced the formation of the lab, dubbed Interaction and Experience Research, at the company's annual Research Day in Mountain View, Calif., last month.

"Better technology isn't enough these days," Rattner said. "What the individual values today is a deeply personal information experience." He said that Intel has assembled a team of user-interface technologists and social scientists "to create the next generation of user experiences."

Intel fellow Genevieve Bell will lead the lab, which will "build on 15 years of research into the ways in which people use, reuse and resist new information and communication technologies," she said.

"We'll ask the question of what people are passionate about, what they want to do and, equally important, what they do not want to do with technology," she added.

Bell said Intel wants to marry these human insights with the company's computer research to create new technologies.

Manny Vara, a technology strategist at Intel, said in an interview that the company is putting a strong new emphasis on studying people, how they use technology now and how they want to use it in the future.

"In 10 to 20 years, we probably won't even think of it as computing anymore, if we do it right," said Vara. "It'll just become part of what you're doing."

For instance, today people talk a lot about social networking, he said, but in a few years digitally connecting with people socially and for business will become routine.

"Any piece of software will have social aspects built in," Vara contended. "We're going to make a lot of these consumer tools more useful, and you'll see more and more of them on the business side."

– Sharon Gaudin

Micro Burst

SKY HIGH

In-flight Wi-Fi will be available on

2,000

airplanes worldwide by the end of this year. But paid usage of such services has been very low thus far.

IN-STAT LLC, SCOTTSDALE, ARIZ., JUNE 2010

DATA MINING

Chicago School Adds Predictive Analytics Center

Chicago's DePaul University has introduced a graduate degree program in predictive analytics, a fast-growing technology used in fields such as marketing, health care and urban planning.

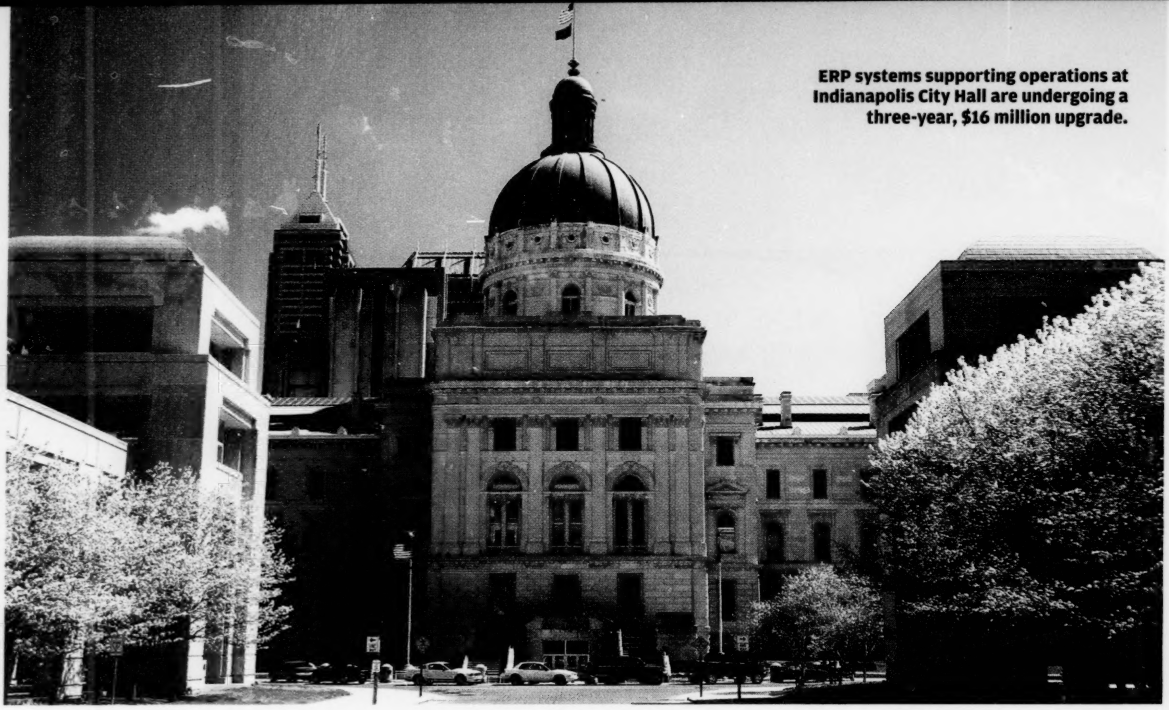
"Predictive analytical skills are in high demand" in all areas of business, said Suzanne Fogel, chairwoman of DePaul's department of marketing. Predictive analytics use data-mining techniques to build models that make predictions about future behavior. For example, organizations use predictive analytics tools to analyze customer churn and the impact of social media on consumer buying habits, Fogel said.

"We realized that no one offers this kind of business-focused predictive analytics program," she said. "There are some business intelligence degrees, but there is no degree in predictive analytics."

The program, which starts in September, will be offered through the university's new Center for Data Mining and Predictive Analytics.

The center includes faculty from DePaul's computing and marketing departments. IBM will support the program by providing predictive analytics software, data sets and guest lecturers.

– JAIKUMAR VIJAYAN



ERP systems supporting operations at Indianapolis City Hall are undergoing a three-year, $16 million upgrade.

NEWS ANALYSIS

City Aims for Easy ERP Plan

Indianapolis/Marion County IT execs hope to avoid failures that have hit similar projects.

By Jaikumar Vijayan

THE COMBINED IT department for Indiana's Marion County and the city of Indianapolis has launched a three-year, $16 million ERP project that it hopes can avoid the failures of similar government efforts in recent years, including ERP implementations in Marin County, Calif., and Philadelphia.

CIO Glen Baker said the plan to replace ancient mainframe-based back-office applications with Oracle Corp.'s PeopleSoft ERP suite includes multiple steps designed to keep the project focused more tightly on business processes than on technical challenges.

For instance, New York-based systems integrator Zanett Inc. has been hired to deploy the new system so IT workers can "focus on business transformation," Baker said.

IT executives also plan to tap experts from both Oracle and Zanett to help train internal staffers to use the new technologies, said Aaron Hood, ERP project director for the Indianapolis and Marion County Information Services Agency.

He added that city and county planners have spent a good deal of time compiling a list of almost 5,000 business requirements to ensure that the system meets the needs of users.

However, the joint IT shop is also "committed to implementing the products as vanilla as we can" to ease adoption, said Baker. "We have as much opportunity as we need to modify them later."

The PeopleSoft ERP software replaces a bloated homegrown system that still includes separate city and county applications for crucial back-office functions such as payroll, human resources and order management, even though the governments have been operating as a consolidated entity since 1970. City workers have also created hundreds of "shadow systems" based on low-end tools like Microsoft Access and Excel to support some administrative functions, Baker said.

The new ERP system, which will run on a Red Hat Enterprise Linux 5-based HP ProLiant blade server, will use a common data repository to manage financial accounting, procurement, HR and payroll applications.

Ben Pring, an analyst at Gartner Inc., said that efforts to simplify such projects are common among IT operations looking to avoid the cost and complexity of unnecessary customization and unneeded technical features.

Consequently, more organizations are looking to keep their technology requirements as out-of-the-box as possible these days, Pring said, adding, "Customization is becoming the last resort." ◆

> We are committed to implementing the products as vanilla as we can.
>
> CIO, CITY OF INDIANAPOLIS AND MARION COUNTY

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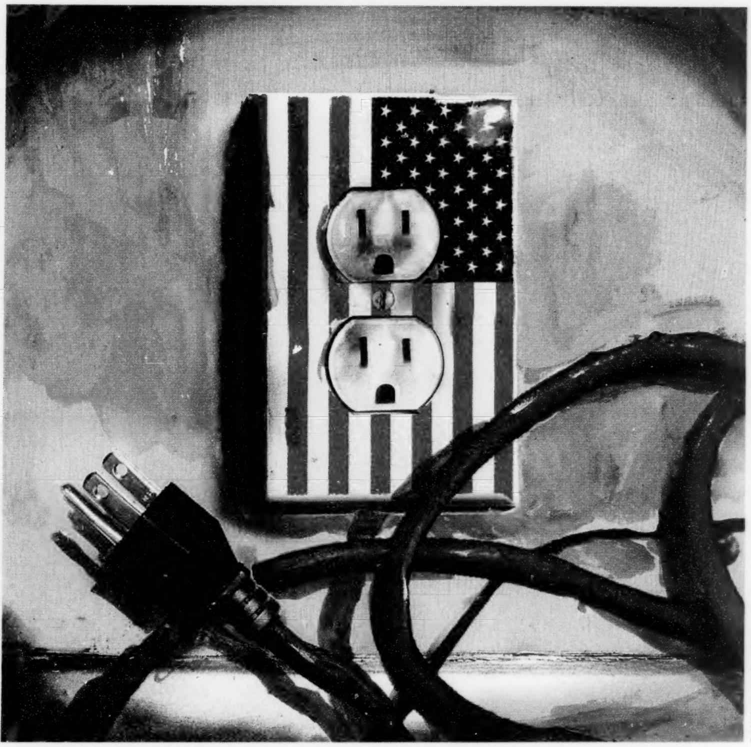


DAVID HOLLENBACH

Feds Pull the Plug on Funding for IT Projects

The Obama administration, citing waste, has frozen spending on 30 IT projects as agencies work to create new plans. By Patrick Thibodeau

THE OBAMA ADMINISTRATION'S decision late last month to halt new spending on some 30 federal government financial system modernization projects is the latest example of President Barack Obama's cautious approach to IT spending.

The move is expected to significantly cut the annual spending on these projects — currently estimated at $3 billion, according to Peter Orszag, director of the White House Office of Management and Budget.

In a blog post, Orszag contended that federal agencies are "wasting billions of dollars a year, and more importantly are missing out on the huge productively improvements" seen in the private sector. For example, he said, the Department of Veterans Affairs "has invested over $300 million in two financial system projects over the past 10 years. The first project ended in failure, and no operational capability has been realized with the second."

Orszag called on the agencies involved to submit "new, more streamlined project plans" to the Office of Management and Budget before spending can begin anew.

Federal government CIO Vivek Kundra has been tasked with reviewing the highest-risk IT projects as part of the effort. Kundra has long been a critic of the federal IT procurement process and is openly envious of the private sector's ability to share common platforms across enterprises and deploy new systems quickly. He has also said that cloud-type environments are an ideal platform for many federal services.

Trey Hodgkins, vice president of national security and procurement policy at TechAmerica, an IT industry trade association, said that even a temporary halt to such projects could prove to be a costly hit for some of the large IT vendors and integrators working on them. The companies could lose millions of dollars in fees while spending significant sums to redeploy hundreds of IT workers to other jobs.

He also suggested that halting the projects and waiting until IT modernization plans are approved to restart them would increase the overall cost of the efforts. "It's going to cost the federal government, we believe, more money by taking this action than they will actually be saving," Hodgkins said.

Input Inc. analyst Tim Dowd, however, doesn't see the White House action as an automatic setback for IT vendors. Dowd cited his firm's continued projection that federal IT spending will see a compound annual growth rate of 5.4% from 2010 to 2015, or from $86 billion to $112 billion.

The action on the financial services systems may be more of a pruning or refocusing of federal IT spending by the administration, he contended.

"It is probably a fairly prudent decision," given that "there is probably a lot of redundancy" in financial systems, Dowd said. The government may move some of this frozen money to more important priorities, he added. ◆

> **"It's going to cost the federal government,** we believe, more money by taking this action than they will actually be saving.
>
> **TREY HODGKINS,**
> VICE PRESIDENT, TECHAMERICA

THE Grill

Jonathan Koomey

This energy expert advocates moving your data center to the cloud.

Favorite technology: My iPhone.

If I weren't doing this, I'd be . . . You're assuming that I'd be doing something else. I am doing exactly what I want to be doing.

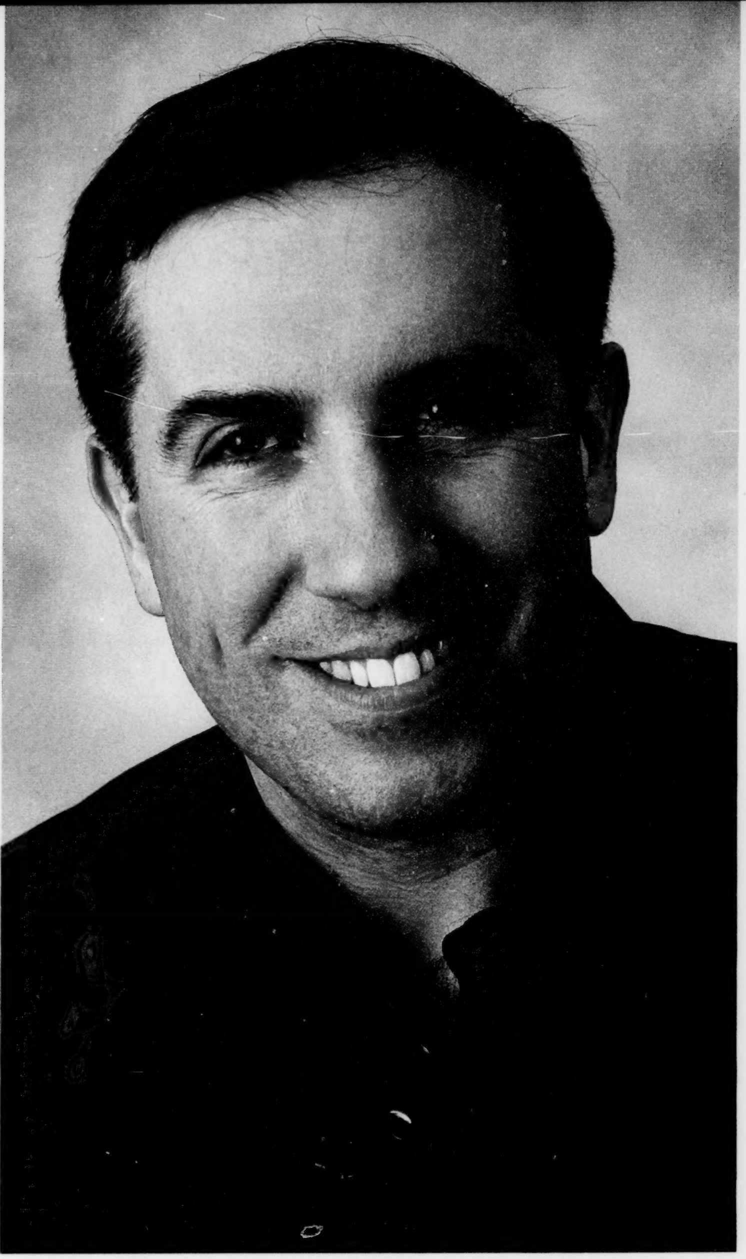
Ambition: To make a difference in how we think about solutions to the climate problem.

Favorite vice: Chocolate

Ask me to do anything but . . . Deal with bureaucracy. It drives me crazy.

Favorite movie: I don't get out much. I have a small baby.

Favorite pastime: Aikido. I'm a third-degree black belt.


GRIGORIEFF PHOTOGRAPHY

PROFESSOR, SCIENTIST *and energy efficiency expert Jonathan Koomey, who recently finished a term at Lawrence Berkeley National Laboratory, got the full attention of the IT community in 2007 when a research paper he wrote revealed that power consumption by data centers worldwide had doubled in just five years. Here, he discusses how the industry has responded to those runaway costs, why cloud computing is better for the environment, and why you should think twice about where you locate your next data center.*

Has the growth curve in data center power consumption moderated since your paper came out three years ago? We don't really know. We have some inkling that things have slowed down in part because of efforts to improve the efficiency of IT equipment and because of the economic slowdown.

Continued on page 8

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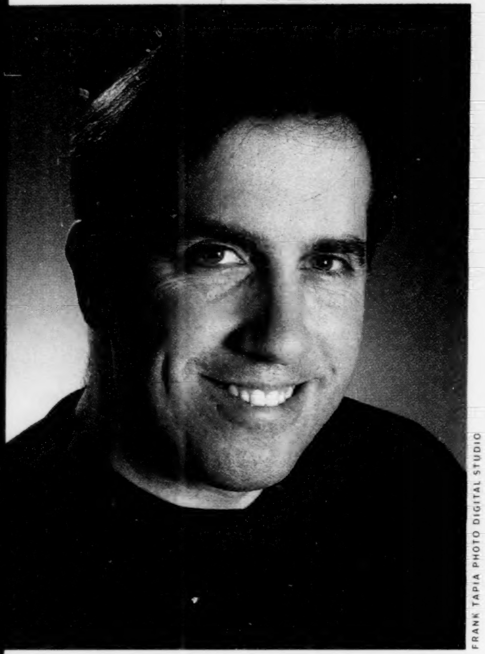

FRANK TAPIA PHOTO DIGITAL STUDIO

> **“Cloud data centers** are allowing us to accomplish our goals in a way that is less damaging to the environment.

Continued from page 6

By 2007, some data centers were already running out of power and having cooling problems. Did your study really come as a surprise? The study provided a quantitative estimate that encapsulated the problems people were seeing in their own facilities. It showed that this was an issue in the aggregate. People didn't know just how big it was.

There's been criticism regarding the amount of electricity that large cloud computing data centers are consuming — and where that power comes from. Is that fair? No, I don't think it's fair at all. Cloud computing data centers are much more energy efficient than standard in-house data centers, and moving bits instead of atoms is a very good thing. The electricity used for the cloud computing data center allows you to do a lot of things in the economy that are much better from an environmental perspective. People don't have to go somewhere — with videoconferencing, you're moving bits instead of atoms.

Those things turn out to be much more important to the environment than just the electricity used by the data center. Cloud data centers are allowing us to accomplish our goals in a way that is less damaging to the environment.

A public cloud has energy efficiencies because it's based on a shared-service model and benefits from economies of scale. Do internal clouds have the same benefits? Anytime you can separate the virtual computations from the physical infrastructure, it will reduce costs and energy use. If you did that internally, you wouldn't have quite the diversity of users that Google has, but you would have those other effects, the economies of scale and the fact that you have the separation of the virtual and physical servers. For example, that means you wouldn't have to have dual power supplies in your servers but could just have the software route around a server that died. The cloud is redefining reliability, which also saves resources.

You've said that a carbon tax on data centers is inevitable and that it could negatively affect some data centers. Why? We need to reduce our emission of greenhouse gases by 80% to 90% by the middle of this century. In order to do that, governments need to impose a price on carbon, because if you have a price, then the markets will filter that through and change behavior in an efficient way. We're going to have to have a price on carbon. That means there will be an effect on the direct electricity use by data centers. That creates a business risk for companies that site data centers in places with high coal use in the electricity sector, for example.

But electricity from a coal-fired plant can be much cheaper than other types of power sources. Would such a tax wipe out any savings from locating in areas that use coal-fired power plants, or would it still be cheaper to operate there versus, say, in Manhattan? It depends. The average industrial price for electricity is about 7 cents per kilowatt-hour in the U.S., so a 2-cent tax on top of 7 cents is roughly a 30% increase. It's not going to wipe out the difference between operating a data center in New York or Wyoming. My point is only that this is a business risk that you need to factor in when deciding where to put a data center.

You talk about misplaced incentives that work against efficiency in data centers. What are the biggest ones? This one of silos, of having the IT and the facilities budgets separate. The IT folks don't have an incentive to spend even an additional dollar on a more energy-efficient server because the savings don't accrue to them.

That's the same issue people were talking about three years ago. Has nothing changed? I'm sure some companies have changed, but most haven't. If you changed that, a lot of other problems would go away.

How will data centers evolve over the next three years? There's going to be an economic trend pushing people more toward cloud computing. Internal data centers are going to see more and more pressure on them. With very few exceptions, they're going to be forced to change because their costs are going to be higher — a lot higher — than the cloud model.

Beyond what we see with cloud computing, how much more efficiency can we expect to squeeze out of data centers? We have a vast potential for improving the efficiency of this IT equipment, and by "vast" I mean by many orders of magnitude. We're very far from the theoretical limit. It's just a matter of getting smarter about how we deliver these services.

– Interview by **Robert L. Mitchell**

EXECUTIVE VIEWPOINT

Joe Graves
CIO
STRATUS TECHNOLOGIES

Joe Graves is an industry leader in technologies for infrastructure availability. As CIO for Stratus Technologies, he reengineered the company's IT environment for maximum uptime using innovative approaches such as virtualization and cloud computing.

FOR MORE INFORMATION:
Download 'Server Virtualization and Cloud Computing: Four Hidden Impacts on Uptime and Availability' at www.Computerworld.com/whitepapers/Stratus

IT Budget Reduction: 50%

Stratus's CIO describes the big savings his company made through server consolidation, and by adopting virtualization and cloud technologies.

When it comes to innovation, Stratus is an interesting contradiction—eager to try new technologies, but steadfastly committed to availability. Below, technology evangelist Joe Graves shares early-adopter successes that delivered on demanding customer expectations.

Why were you an early adopter of virtualization and cloud technologies?
Stratus IT has always been open-minded to innovation; challenging status quo to achieve corporate objectives. With virtualization, in particular, the true business benefit became obvious when we quickly offset the cost of servers in our test environment. And it was clear that Software-as-a-Service (SaaS) was the way to go for major applications because it enabled us to provide solutions quickly, without asking for gobs of resources.

What challenges have you faced, and how did you overcome them?
For virtualization, we've consolidated as many as 14 servers into one server, so we couldn't risk any glitches. We address this with excellent policy, process and system management practices, while using our own fault-tolerant ftServer hardware to help guarantee 24x7x365 availability. Our initial challenge with the cloud was integration and security. We needed to integrate applications to avoid duplicate data entry, so we ultimately invested in a third-party integration tool. For security, we protect data by using a proxy behind the firewall. In other cases, we keep data on-premise and then link to it through a SaaS application, while leveraging the vendor's security best practices.

How do you prioritize the rollout of new technology?
We're innovative, but not foolish. As early adopters, we may face some teething issues. So new technologies are first deployed in test environments; then we work our way up the importance stack from non-critical to mission-critical areas. By the time we get to our critical applications, we're confident.

How has the technology impacted your IT strategy?
Virtualization and cloud innovations have allowed IT to become more agile and adaptive. We have a fairly efficient and lightweight IT governance policy primarily because we can provision servers quickly for in-house solutions, or leverage SaaS for major application deployments. That helps us respond to business demands and focus on strategic activities—beyond keeping the lights on.

Where did you realize the greatest cost savings?
In the last eight years, we've cut the IT budget by more than 50 percent. We've saved roughly $2.2 million in CapX by consolidating 180 servers to 14 servers. There's another $200,000 savings in recurring, annualized expenses. Since we're maintaining so few servers, we've cut administrative costs and enjoy lower power, cooling and facilities expenses. Meanwhile, the cloud has lowered the cost and overhead of providing solutions, and we're paying less for things like software upgrades.

How have these innovations contributed to customer satisfaction?
The contribution to our high customer satisfaction rating comes not only from providing customized tools to service applications, but also by ensuring continuous availability. That 100-percent availability is IT's number one accountability, and we get there through innovation like virtualization and cloud computing. But the true credit lies in a corporate culture that is very customer focused. IT is just an enabler of that commitment.

Stratus Technologies

COMPUTERWORLD
Custom Solutions Group

OPINION

THORNTON A. MAY

It's Past Time to Drop The CIO Stereotypes

Isn't it time to move away from 1980s and 1990s thinking about CIOs?

I'VE WRITTEN here lately about the need for more passion within IT. Now, I will express some passion of my own in defense of the profession, and its leaders in particular.

I'm tired of people making generalizations about CIOs. It's been happening for 30 years, and it seems as if the stereotypes just keep coming.

This frustrates me, because in my view, IT's potential to impact the world in a positive way has never been greater. To appropriate a quote from Thomas Paine about something else entirely, we are at a point where, with passionate action, IT leaders "have it in our power to begin the world all over again." IT leadership has never been more important and, apparently, less understood.

Clearly, not everyone agrees with me that we are teetering on the cusp of IT's greatest era. Case in point: Three credential-rich California academics proclaim in *The Wall Street Journal* that "CIOs are last among equals."

Shoddy journalism regarding the business impact of information technology is to be expected from *The Wall Street Journal*. I have long lamented that paper's misplaced coverage of IT. The *Journal's* top voice on technology matters focuses on what happens inside the device rather than, say, the business value and market capitalization impact that an informed mobility strategy might have on a publicly traded company.

Of more concern is the May 24 *Journal* article by Peter S. DeLisi, Dennis Moberg and Ronald Danielson, in which those respected academics tell us that "most CIOs don't have the broad business understanding, strategic vision and interpersonal skills that it takes to run a company or at least play a bigger role in running one." Are any readers having a Nick Carr "IT Doesn't Matter" moment of déjà vu?

Let me throw a little data into the mix. There are 500 CIOs in the Fortune 500, and there are 100 CIOs in the FTSE 100. Each of those CIOs has a unique set of strengths and weaknesses. Some of them are among the finest business leaders on the planet today.

Let Go of Stereotypes

And yet two stereotypes about IT professionals just won't go away. One is that IT people don't understand business; the second is that IT people lack social skills — that we are somehow semi-autistic when it comes to dealing with other carbon-based life forms. Isn't it time for society at large to move away from 1980s and 1990s thinking about CIOs?

Isn't it time for journalists and academics to let go of long-held stereotypes of what CIOs know and don't know?

All of the Fortune 500 CIOs I've met *know* their businesses inside and out. Most of the IT professionals who appear in these pages *know* the strategic, tactical and technical realities of their enterprises. Any CIO who has completed the difficult task of implementing a global ERP system *knows* his organization's business. Indeed, every CIO I know personally has business insights that his company's CEO is eager to hear.

To portray CIOs as geeks and machine-tenders is as anachronistic and distasteful to me as notions of racial or national supremacy.

It's time to take the conversation to a different plane. ◆

Thornton May is the author of *The New Know: Innovation Powered by Analytics* and executive director of the IT Leadership Academy at Florida State College at Jacksonville. You can contact him at thorntonamay@aol.com.

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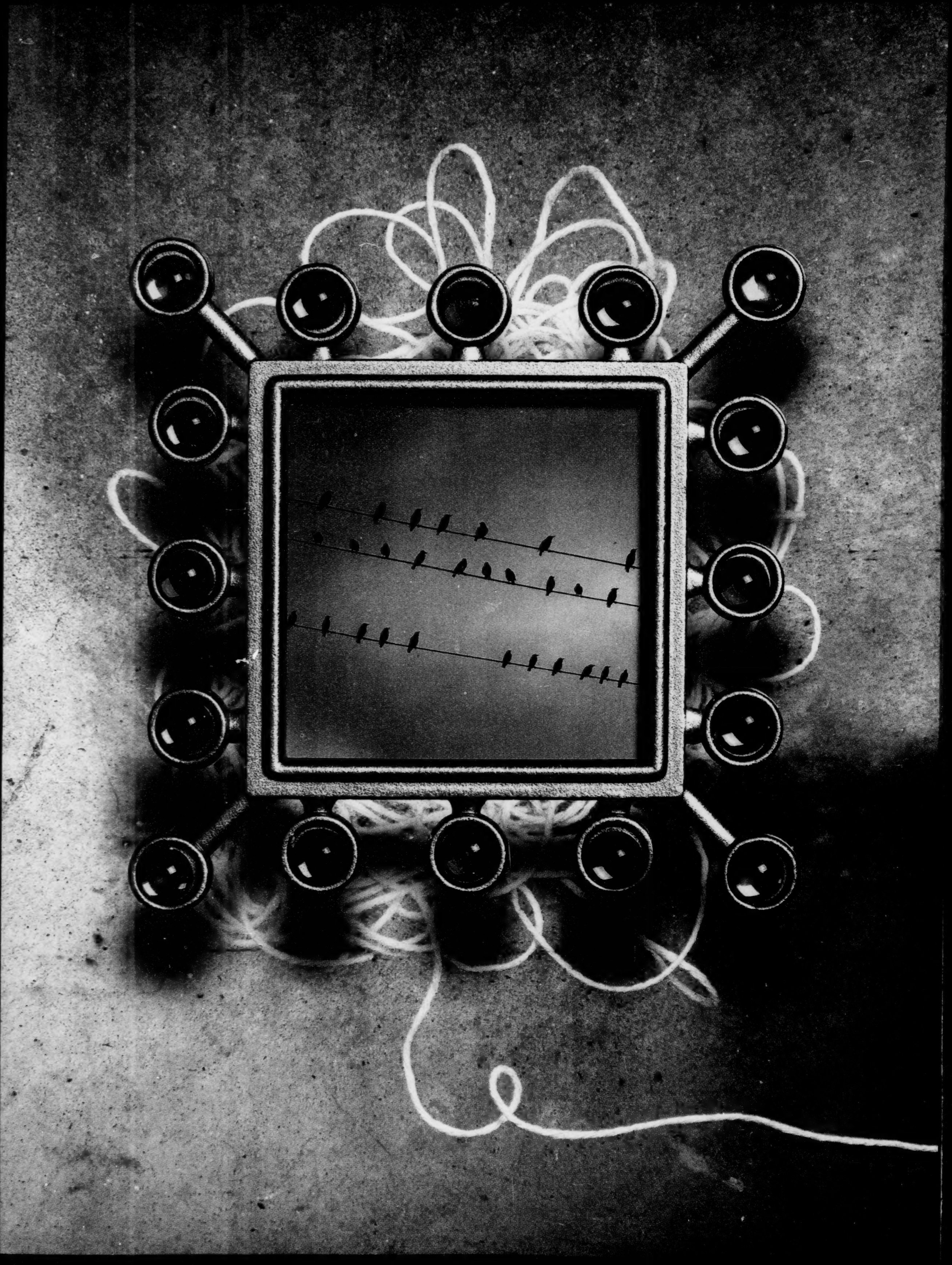


are you LISTENING?

Monitoring customer *chatter* on social networks can yield ***big benefits***, especially if IT gets involved.

BY MARY BRANDEL

COVER STORY

PEOPLE REACT to the Publishers Clearing House sweepstakes in one of three ways: Some hope that the next knock on the door will be a member of the company's Prize Patrol carrying a giant check; some think the whole thing is a joke; and others exploit its brand for scams. Tracking the buzz from all three types — and responding to it — has grown ever more complex with the spiraling growth of social media, says Josh Glantz, vice president of Publishers Clearing House Online, the Internet arm of the company that claims to have awarded more than $200 million in prize money in the past 30 years.

In addition to a small, internal social media team that uses tools like Google Alerts, Glantz recently hired an interactive marketing company to provide a more thorough social media reputation management service. It provides him with reports and analysis of all of the chatter on blogs, microblogs, forums and chat rooms, as well video-sharing and social networking sites.

In just one month, Glantz says, these efforts uncovered 73 blog posts

mentioning scammers who call people and pretend to be from the sweepstakes giant. "We look at social sentiment very aggressively, because we have a sensitive brand to protect," he says.

Monitoring, analyzing and responding to what consumers are saying on social media sites are no longer just activities for big-name companies. With consumers sharing their experiences through Twitter, Facebook, YouTube and other outlets at "the speed of thought," as Gartner Inc. analyst Toby Bell puts it, this is quickly becoming an essential piece of any company's risk management and customer engagement strategy.

Social media monitoring efforts usually start in marketing or public relations departments. But as they become more important and expand to other areas of the company, the IT department will need to play a role.

"These systems open up opportunities that cross organizational silos, and CIOs are in the right position to understand the technology layers and how the data should connect to the business strategy," says Nathan Gilliatt, principal at Social Target LLC, a research and consulting firm in Apex, N.C.

At a minimum, he says, IT leaders should understand the goals of social media monitoring and engagement initiatives. And as practices mature, they should help to combine social media analysis with data from other systems to gain new customer insights.

The Clock Is Ticking

It's a big challenge not only to draw a bead on what's being said on social media, but also to figure out how to respond effectively — and to do so within an increasingly compressed time span.

"Companies used to believe a 24-to-48-hour response time was sufficient, but the clock has been reset," Bell says. "If a customer service representative doesn't respond to someone complaining fairly quickly, it looks like I'm ignoring the customer."

"Response has to be in minutes," agrees Jeremiah Owyang, a partner at Altimeter Group, a San Mateo, Calif.-based consultancy. Think of celebrated incidents that brought Domino's Pizza and the makers of Motrin unwanted notoriety — the former from an employee-made video that offered an unpleasant look at the way pizzas are made, and the latter with a short-lived ad campaign called "Motrin Moms" that some people found offensive. Both companies waited more than 24 hours to respond to the chatter on social media, and that was enough time for the incidents to enter mainstream consciousness. "Tweets become blog posts, YouTube videos or articles," Owyang says. "Companies have to respond in real time."

If a savvy company sees a Twitter complaint about long wait times on the phone, it might immediately respond with an apology and offer the customer a discount on his next purchase.

"The risks of not being engaged grow as consumers test this with their favorite companies," Bell says. And whereas it once might have been enough to monitor, measure and react to specific situations, it's now imperative to engage proactively and frequently, he says.

Besides, companies that are on the leading edge of social media monitoring are putting pressure on those that thought they could fly under the radar, Bell says. Consider these examples:

- Comcast Corp. and Zappos.com are both known for engaging customers on Twitter, particularly with quick responses to complaints. Zappos CEO Tony Hsieh now has 1 million Twitter followers, and Comcast's Frank Eliason (a.k.a. @comcastcares) is one of the best-known customer service representatives in the U.S.
- Microsoft Corp. engages with millions of IT professionals

AT A GLANCE

Social CRM

Definition: Systems – often provided via software as a service – that help marketers monitor online discussions, understand customer sentiment, identify influencers and use the resulting insights to improve market research, positioning and strategy.

Also known as: Listening platforms or social media analysis platforms.

A small sampling of vendors: Biz360 Inc., Cymfony, Radian6 Technologies Inc., Visible Technologies Inc.

Cost: Enterprise-level services may cost $50,000 to $200,000 annually, depending on the size of the engagement and on the number of topics, competitors and keywords tracked. Brand-monitoring vendors charge $500 to $5,000 per month. There are also free options, such as the online tool at SocialMention.com.

ROI: To get the most for your money, focus on a few metrics that matter to the business. ROI can come in the form of improved conversion rates for online sales or reduced market research costs. But getting that return on investment requires a process for turning the data into a marketing strategy. That means sharing insights with all front- and back-end systems, such as CRM systems, call centers and Web sites that affect customer interactions.

SOURCES: FORRESTER RESEARCH INC. AND SOCIAL TARGET LLC

How It Works

Nathan Gillatt, principal at consultancy Social Target, says that most social media analysis platforms are offered as software as a service and have the following capabilities:

Monitoring: Automated systems find and read new items that are relevant to the business, such as blog posts, comments, discussions on message boards and Twitter tweets. Some systems add data about the size of the audience, enabling companies to determine the degree of influence the source has.

Measurement: All systems provide metrics, but they differ in how much they emphasize measurement vs. monitoring. Basic metrics include volume of search results, consumer sentiment, leading topics and leading sources. Some platforms also report demographics, geographic location or links contained in the content.

Alerting: Some systems send notifications via e-mail, instant messaging or text messaging when a new item is discovered. Alerts can also be triggered when certain thresholds are met, such as a sudden increase in negative commentary.

Search: Companies can make ad hoc queries (in addition to the automated monitoring).

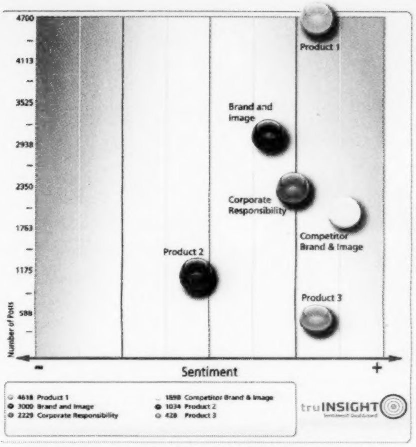
Data mining: Some systems can look for meaningful patterns in archival data.

Analysis: Most systems provide sentiment analysis, which characterizes comments or documents as positive, negative or neutral, using automation, manual coding or a combination of both. Topics are frequently displayed in the form of a list or word cloud. Pie, line and bar charts abound in these systems, while some products also provide fancier geographic maps, social network diagrams, bubble charts and spider charts. Most of the charts are interactive, allowing users to click on them to explore the data further or to read the original content sources.

– MARY BRANDEL

on social media. Using monitoring technology from Visible Technologies Inc., Microsoft identifies 3,000 blog and forum posts per day and then narrows them down to 400 posts that are scored as negative, positive, mixed or neutral. After further review, the engagement team responds to 30 to 60 of the posts.

- Southwest Airlines Co., well known for its Twitter communiqués to 1 million followers, uses software from Radian6 Technologies Inc. to track social media. That helped it quickly respond to the Twitter storm that arose when film director Kevin Smith complained via a tweet that he was forced off of a flight for being too fat.



» Sentiment analysis by Visible Technologies' truInsight tool shows whether online comments are positive or negative.

Not Just Twitter Search

The field of social media monitoring has quickly grown beyond simple tools such as Google Alerts and Twitter Search to encompass specialized digital marketing agencies and software-as-a-service offerings that provide analytics via a dashboard.

However, the allure of real-time consumer opinion and brand sentiment available on social media — along with growing alarm over how quickly public opinion can turn against you online — is leading companies to combine social media data with enterprise applications such as customer relationship management and business intelligence systems. As that happens, monitoring-service providers are adding hooks to enterprise applications.

"IT is just waking up to this," Owyang says. "They're realizing departments are deploying their own systems and doing their own thing, and the challenge is that customer data is being spread out in silos. IT is starting to realize it needs to step up and come to the table with an enterprise view."

Altimeter calls this "social CRM," which Owyang says comprises the following five fundamental processes:

- Monitoring.
- Mapping (linking social profiles to customer records).
- Management (creating business rules and processes).
- Middleware (enabling data to flow between systems and dashboards).
- Measurement (using BI tools to identify trends, gauge sentiment and make predictions).

Suresh Vittal, an analyst at Forrester Research Inc., argues that social monitoring platforms gather data but don't provide marketing insights. "Marketing teams need a process in place to interpret and analyze data and produce actionable insight," he wrote in a recent report. "This means sharing insights with all front-end and back-end systems like CRM, call centers and Web sites that influence customer interactions." While it's possible to share such insights manually, he wrote, "eventually marketers must budget for systems integration."

Vendors last year began integrating their social analysis platforms with CRM applications, particularly Salesforce.com, Gilliatt says.

> Eventually *marketers must budget* for systems integration.
>
> **SURESH VITTAL,**
> ANALYST, FORRESTER RESEARCH INC.

With those systems, users can create or update entries in the CRM application without leaving the social media analysis tool and send the information to customer support teams. The episode is captured in the customer record for future reference. Most of the platforms also offer APIs for custom integration with other software systems, Gilliatt says.

Recovering a Fumble

DirecTV Inc. is a good example of a company that's integrating social media data throughout the organization. The company began investing in social platforms more than five years ago, says Charles Miller, director of digital care and social media strategy, and today it uses several monitoring tools. One is Visible Technologies' online monitoring platform, which, Miller says, converts qualitative comments into a quantitative structure to help measure consumer sentiment and identify trends.

Online monitoring has proved to be an early-warning system that allows DirecTV to respond to problems quickly. On the opening night of the 2009 college football season, Miller recalls, DirecTV's social media group noted chatter about the loss of a high-definition version of a popular sports channel. "Within two to three minutes of spotting this, we notified our broadcast team, who went into immediate channel-recovery mode," Miller says. Through forums and other online venues, the team advised viewers to watch the standard version until HD could be restored. Simultaneously, it notified customer care representatives of the issue and the resolution. "When this was solved, we directed followers back to the HD channel," Miller says.

DirecTV's IT group integrates customers' social attributes into its CRM system so that data can be mined for insights later. "As CRM social integration deepens, IT will be more and more involved," Miller says.

Social media insights also influence product design. DirecTV's engineering team gets comments about beta offerings from its customer-run online community and incorporates those suggestions in the company's products, Miller says. "We have also built relationships with brand advocates and influencers," he says. For example, he adds, "sharing our mobile DVR scheduler with iPhone, BlackBerry, Android and Palm enthusiasts has been particularly effective in driving adoption rates and getting feedback on the [mobile] apps."

In the future, the key differentiator will be how organizations take what they learn from monitoring social media and share it with product managers, Miller says.

Gartner's Bell agrees. "Even companies that think they don't have a consumer-facing product will be surprised to know they're still being reviewed or reacted to," he says. "And if you [aren't] participating in that, it will have a negative effect." ◆

Brandel *is a* Computerworld *contributing writer. Contact her at marybrandel@verizon.net.*

IT Education on a Budget

Community colleges are bursting at the seams, as students clamor for the **adaptive, skills-driven education** these schools offer – all at **rock-bottom prices**.

BY MARY BRANDEL

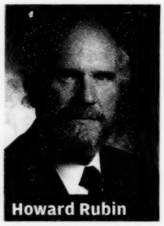
W**HEN BOB KANSA** graduated with a bachelor's degree in computer science almost 40 years ago, a surprise awaited him on his first day of work: He was unprepared for the job.

"The courses I took in college were not directly related to what I was doing on the job," says Kansa, now associate dean of IT at Macomb Community College in Warren, Mich. "I was asked to do some programming [that] I was totally unprepared for." Whereas the school taught console I/O for direct-access Fortran applications, for example, his job required file I/O. The college also taught regression and how to write an operating system boot loader — skills that never came into play in all his years in the industry, he says.

With that experience lodged in his mind, he has worked for seven years to ensure that the same thing won't happen to computer science students pursuing associate's degrees and certification training at Macomb. "That's one of the challenges for community colleges in general," Kansa says. "We focus on the skills students need for a job versus engaging in an academic exercise."

And Kansa isn't the only one advocating alternatives to the traditional four-year-university path to an IT career. Technology education gurus such as Howard Rubin, professor emeritus of the City University of New York and president of Rubin Systems Inc., argue that for the U.S. to remain competitive in today's global and volatile economy, it needs to create a deep bench of perpetually cutting-edge technology professionals. To do that, Rubin envisions what he calls "proactive refresh institutions" that develop, adapt and augment technology capabilities more quickly and frequently — and more in line with up-to-the-minute business needs — than what is offered through a traditional four-year approach.

"The educational systems of the past can't respond," Rubin says. "There's so much more you can do with a two-year model to make people eligible to perform exceptionally well in a technology role. And the sooner they can get to the workplace and make decisions on future specialization, the better off they are."



Howard Rubin

Market-Responsive Programs

Rubin is heartened to see community colleges developing programs designed to respond to market needs, such as those geared toward environmental technology and others focusing on health IT in response to the government's call for electronic health records. Miami Dade College in Florida, for example, has applied for two grants to develop curricula in cloud computing and health IT. Macomb has also applied for two grants — one for coursework in electronic health records and another involving network design for health care providers. Macomb is also one of a growing number of community colleges that recently added a degree in computer game design to meet the needs of that fast-growing industry. The degree is supported by a new networking lab, just completed last fall, which is also used for the school's network administration and security curriculum.

Meanwhile, Seattle Central Community College (SCCC) used a grant from the Bill & Melinda Gates Foundation to renovate a 10-year-old computer lab and provide a one-to-one ratio of students and computers, and it added courses in hot areas such

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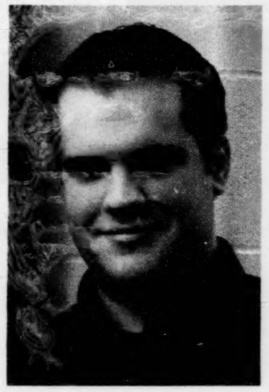
STUDENT PROFILE

Justin Wegleitner



- **Degrees: Associate's and bachelor's in information technology, with a minor in business**
- **Colleges: Century College and Saint Mary's University of Minnesota**
- **Job status: Full-time network engineer**

JUSTIN WEGLEITNER didn't have to wait a long time between graduating from high school in 2005 and starting a full-time job as a network analyst in the summer of 2006. His fast-track ticket to employment: beginning work on an associate's degree in information and telecommunications technology at Century College during his final two years of high school.

But shortly after enrolling at Century full time, he knew his education wasn't complete. "I was thinking of getting just a two-year degree, but as I got further into the program, they basically explained that if you want to go on in the industry, you need the business background as well," he says.

And so, right after getting the associate's degree, Wegleitner went off to Saint Mary's University of Minnesota, where he was able to transfer all of his community college credits and obtain a bachelor of science in IT, with a business minor, in just two more years. When he graduated in 2008, he scored a new job as a network engineer at a consulting firm.

So far, he says, the four-year degree hasn't boosted his salary, but he feels confident that it will increase his upward mobility. His current goal is to move toward a Level 2 network engineer position, and he ultimately sees himself growing into a project manager or CTO role. He is working on Cisco Certified Voice Professional certification and is considering going for a master's degree in some aspect of business management.

The advantage of obtaining an associate's degree before moving toward a bachelor's, he says, is that Century was "very, very hands-on. You got to see the real-world experience of what an entry- or midlevel person would be dealing with."

The school also prepared him well for obtaining the bachelor's degree, Wegleitner says. For instance, the coursework provided a taste of what project management entailed. "They left it that way so you understood what it would be like in the real world," he says.

— MARY BRANDEL

as open source, virtualization and VoIP. And Century College in White Bear Lake, Minn., has revamped its entire degree program to make it more relevant to the needs of today's IT professionals.

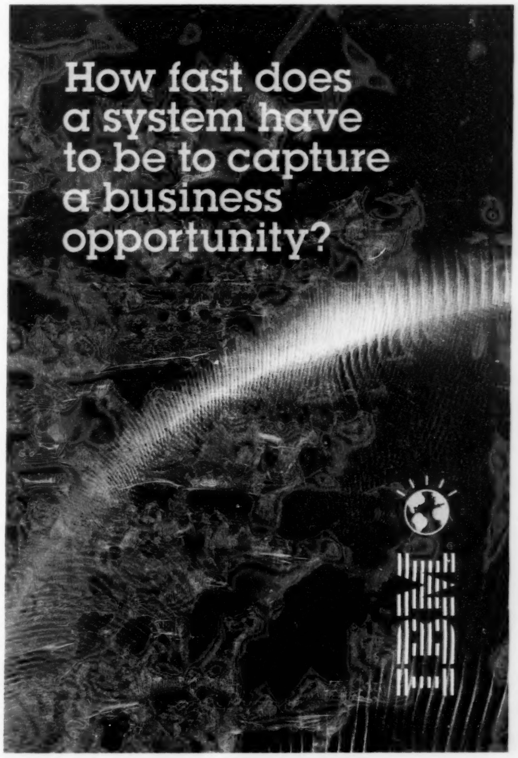
Century now offers students an introductory course that provides an overview of IT career paths and then requires them to choose one of three tracks: storage-area networks, security or VoIP. "IT is way too complex to prepare people to be generalists," says Scott Simenson, director of information and telecommunications technology at Century. The degrees also include business skills development, in response to suggestions from an advisory board made up of local business leaders, and students can obtain popular industry certifications. "It's more strategic than supporting the desktop connection to the printer," Simenson says. All of this is supported by a $5.5 million computer lab.

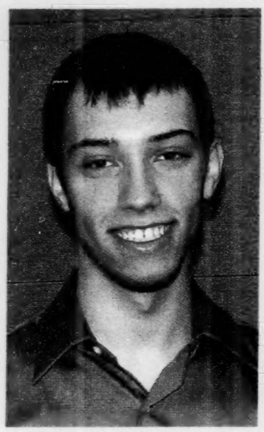
In addition, Century's Digital Fabrication Lab supports the creation of innovative solutions to common scientific and technical issues through industrial-grade fabrication and electronics tools.

Community colleges also work closely with vendors such as Cisco Systems Inc. and Microsoft Corp. to develop coursework that mirrors their certification requirements or even to become a Cisco Networking Academy or Microsoft IT Academy, which enables the schools to purchase systems for their computer labs at deep discounts. They also work with businesses to share computing resources, through virtual links or directly.

The Labor Pipeline

Community colleges are particularly in the spotlight these days. The Obama administration pledged last summer to inject $12 billion in funding to community colleges over 10 years through the American Graduation Initiative, which was announced on





STUDENT PROFILE

Andrew Hrycaj

- **Degree: Pursuing an associate's degree**
- **College: Macomb Community College**
- **Job status: Full-time network consultant**

WHEN Andrew Hrycaj graduated from high school in 2004, he enrolled at Wayne State University in Detroit but quickly decided it wasn't for him. Classes were large, it was difficult to ask questions of the professors, "and basically, you were just a seat number," he says.

Hrycaj has had the opposite experience at Macomb Community College in Warren, Mich. Not only do classes have fewer than 30 students, but the teachers are readily available, and the coursework has enabled him to earn several industry certifications, including Cisco Certified Network Associate and Cisco Certified Design Associate. Through it all, he has worked full time, first as a network administrator and now as a network consultant, while pursuing an associate's degree. Ultimately, he plans to earn a bachelor's degree at a four-year university in Michigan. "Companies like to see you're at least pursuing a bachelor's as fast as you can," he says, especially for management or senior engineer positions.

Hrycaj says the community college approach let him focus on what interested him right away instead of requiring him to load his schedule with general, non-IT courses the first two years and then specialize later, as many bachelor's programs do. Although he has taken some biology, English, math and government classes, he says, "I like the idea of getting to know who you are and what you like to do and being able to pursue that."

So far, Hrycaj has attended classes on campus, although he could study online if he wanted to. "I enjoy the atmosphere," he says. "And I like interfacing with the teachers and having them right there versus being an e-mail away."

In the future, Hrycaj sees himself working as a consultant for 10 to 15 years and then moving toward a senior network engineer role.

Best of all, he won't have to deal with the hassle of obtaining and paying back loans, even when he's pursuing his bachelor's. "It's a nice feeling to know I'll be able to make a name and reputation for myself and not worry about gigantic loans," he says. "As long as you know your stuff, you can feel you'll always find a job, even in Michigan."

— MARY BRANDEL

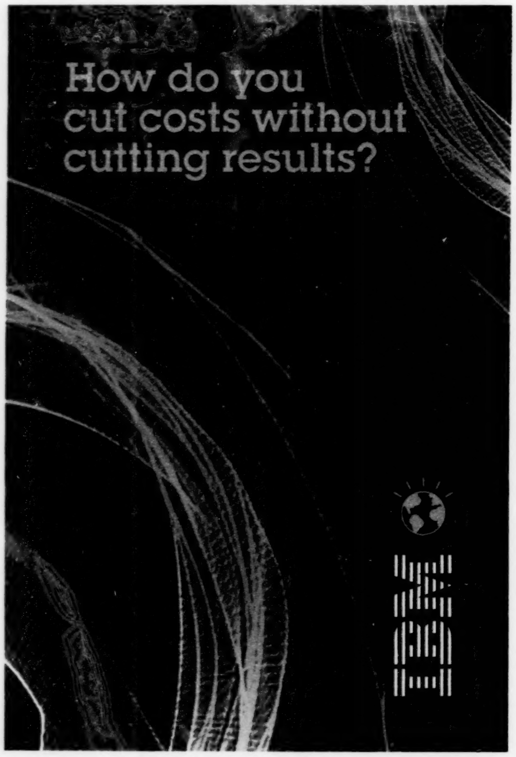
Macomb's campus in July 2009. The money will fund a variety of initiatives, such as competitive grants to expand course offerings, build business partnerships and offer personalized student services, performance-based scholarships and online courses. An additional $2.5 billion will go toward facilities. President Obama also called on community colleges to produce an additional 5 million graduates by 2020.

Such an investment is crucial, Obama says, because in the coming years, the number of jobs requiring at least an associate's degree is projected to grow twice as fast as the number of jobs requiring no college experience. "We will not fill those jobs, or keep those jobs on our shores, without the training offered by community colleges," he said at the American Graduation Initiative announcement. The initiative is currently awaiting Senate approval.

"We're seeing a much more serious commitment from this administration than we've ever seen before," says Scott Jaschik, editor of *Inside Higher Ed*, an online news source. And that's a good thing, says Richard White, director of the School of Computer and Engineering Technologies at Miami Dade College. Funds are needed to improve counseling services and to enhance developmental education. "We get the full gamut of people, from honors students transferring to top universities, to students not fully prepared to enter college," he says.

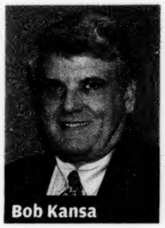
Bursting at the Seams

But the real interest in community colleges is among students themselves. With skyrocketing tuitions and an uncertain economy, more high school graduates are attracted by the fact that community colleges are far less expensive than four-year institutions. According to American Association of Community Colleges


How do you cut costs without cutting results?
IBM

(AACC), enrollment was up 11.4% in 2009, with the percentage gain in full-time students more than twice that of part-timers. Today, community colleges account for 44% of all U.S. undergraduates, including both part- and full-time students.

Two years ago at SCCC, there were about 120 computer science students, says Lisa Sandoval, who manages the Seattle school's Web design, Web development, database programming and network design programs. Today, that number has risen to 230 in her programs alone, which don't include the application support and business IT programs.


Bob Kansa

Meanwhile, Miami Dade has had a 17% increase in its IT and engineering enrollment and, for the first time, has had to cap the number of sessions it offers. Century's IT classes are full, and Macomb is "maxed out in terms of the numbers of students we can accommodate," Kansa says.

At Miami Dade, the average age for IT students is 26, meaning that many are in retraining mode, although there are a significant number of recent graduates from local high schools as well, White says. Located in a county with an unemployment rate of 17%, Macomb is also enrolling a large number of displaced workers. But the fastest-growing group is traditional college-age students who are happy to pay the school's $72 per credit-hour rather than a four-year state school's $350 per credit-hour, Kansa says.

The enrollment boom is causing real problems for community colleges, which traditionally have been open-access institutions that don't turn students away. Century has run out of classrooms, Macomb has scheduled classes on weekends, and according to Jaschik, some colleges have begun offering midnight or 7 a.m. classes. Despite such measures, an AACC survey showed that 34.2% of the group's member institutions turned away potential students last fall because they couldn't accommodate them.

Another difficulty is that community colleges must serve more students with less federal funding than their four-year counterparts. While budget cuts have hit all higher-education institutions, community colleges get just one-fourth the level of funding that public schools do for a full-time equivalent. "We're carrying 15,000 additional students basically with no additional funding," White says. "At some point, it's going to become very problematic."

Industry Guidance

Students who do enroll in community college IT programs can have a high degree of confidence that coursework has been vetted by advisory committees that include local industry leaders.

"We're able to keep our thumb on the pulse of the industry and offer special courses on any emerging technology that changes from quarter to quarter," Sandoval says. An example is a recent course offered in Ruby on Rails, she says, as well as workshops SCCC will hold this year on open-source technologies.

"We cater to what our local industries tell us they need," White agrees. Miami Dade also added courses on open source, has set up some virtual servers in its lab and recently updated its computer support degree to emphasize networking and equipment connectivity rather than desktop support.

Century also consults with an advisory committee that includes local businesses interested in hiring its graduates, including several large insurance and financial firms and medical institutions. Because those industries have huge storage and backup needs and have to address business continuity concerns, Simenson decided to add a SAN track to the IT degree program, as well as some courses on business skills. "We used to be pretty focused on the nuts and bolts of IT, but that's not enough to adequately prepare someone for the technology profession," he says.

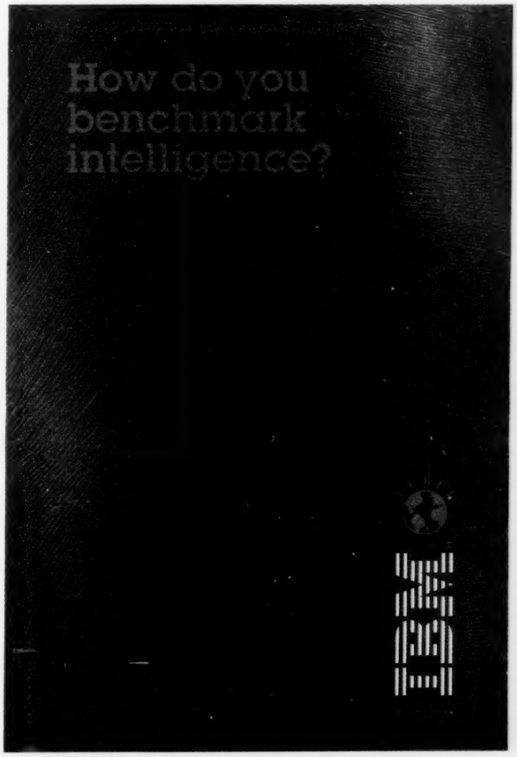
A four-year university might argue that teaching computer science concepts provides students with a foundation to learn new things more quickly throughout their IT careers. But community colleges say their practical approach produces graduates who are better prepared to enter the workforce, even if their ultimate goal is to achieve a four-year degree.

Indeed, Kansa says, while smaller companies are open to hiring people with associate's degrees, larger companies often won't touch anyone who doesn't hold a four-year degree.

Simenson agrees. Although many students leave Century and go straight into industry, he says, "we strongly encourage people to get a four-year degree." To that end, Century works closely with students to help them develop educational and career plans.

With burgeoning enrollment and federal attention, it's clear that the role of the community college is evolving. But for some of these schools, the spotlight is shining on work they've always done. Says White, "We're seeing renewed interest at the federal level in programming we've been offering all along." ◆

Brandel *is a* Computerworld *contributing writer. Contact her at marybrandel@verizon.net.*


How do you benchmark intelligence?
IBM

Steer Clear

OF CONSOLIDATION POTHOLES

Look out for underpowered servers, configuration snafus and scalability issues.

By John Edwards

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JOE LATRELL, IT manager and lead programmer at GetMyHomesValue.com, a real estate data services company in Lancaster, Pa., knows that it's all too easy for even a knowledgeable and experienced IT veteran to make mistakes while managing a complex server-consolidation project. "You have to think about everything," he says. "It can be a minefield."

Server virtualization projects are usually easy to justify on both financial and operational grounds, but that doesn't make them foolproof to execute. Pitfalls such as inadequate planning, faulty assumptions or failure to quickly detect postdeployment glitches can entrap consolidation project leaders and team members at almost every stage.

"Every time [we] felt that we covered every base, that every single thing had been looked at, that's when the danger started," says Latrell, whose project experienced a variety of woes, including underpowered servers, configuration snafus and budget constraints.

Avoiding disaster while keeping a complicated consolidation project on schedule and within budget isn't easy. In fact, Latrell believes that making at least a few mistakes along the way is inevitable. "It will go wrong: Be prepared," he warns. "On the other hand, planning and learning from others will keep you from making the big and obvious mistakes."

While even the most thorough planning can't completely eliminate project mistakes, building a detailed virtualization design and deployment strategy will help minimize the number of gotchas, says Justin Gallagher, senior IT consultant at KDSA Consulting LLC in North Andover, Mass.

"People aren't spending enough time thinking about the issues of the existing workloads and how you migrate those into a virtual environment, and what does that mean in terms of cost structure, ongoing expense and high availability," adds Jeff

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> **We talked to three or four hospitals ahead of time and learned some important lessons from them.**
>
> **ERIC MYNSTER,** IT OPERATIONS MANAGER, MERCY MEMORIAL HOSPITAL SYSTEM

Nessen, IT consolidation practice manager at Logicalis, a systems integrator in Bloomfield Hills, Mich.

Gallagher says that consolidation planning also needs to address an organization's future needs, such as anticipated growth. "Look at what you're going to do a year, three years and five years from now," he suggests. "You don't want to get yourself in a situation where you do this whole big upgrade and then you find you need more [server capacity] later on."

Jason Cooper, a consultant at C/D/H Technology Consultants in Grand Rapids, Mich., agrees that every consolidation plan needs to address scalability. "We often run into issues with organizations that either didn't allocate enough storage or simply didn't correctly anticipate the amount of server power that was going to be needed to facilitate their server consolidation project," he says.

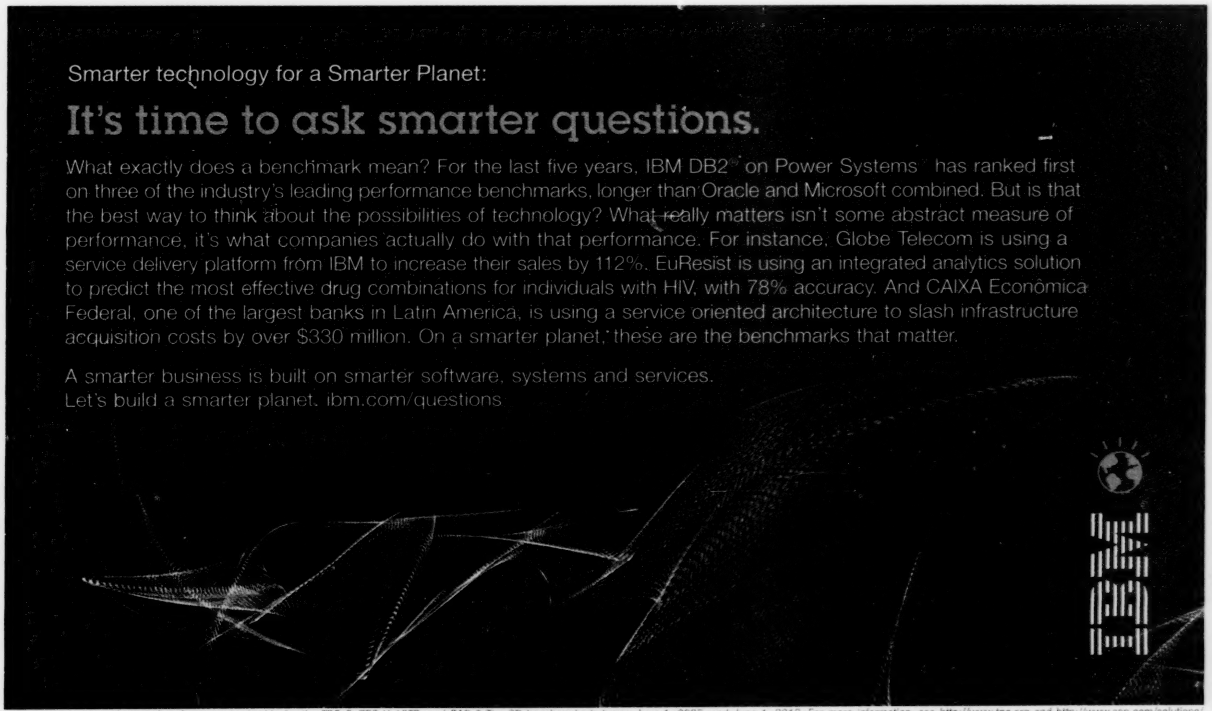
Planning is particularly critical when managing a data center with outmoded equipment and a limited budget. When Latrell arrived on the job, he inherited a motley collection of servers, including converted desktop PCs and a mix of underpowered stand-alone and rack-mounted machines. He was determined to streamline the collection into a uniform line of rack-mounted servers and, in the process, winnow the total number of units from 23 down to 12.

"We understood we didn't have the budget to just go out and buy 12 new servers, so we decided to purchase the machines as we could afford them," Latrell says. "We planned in advance to implement one piece at a time, and it's worked out well."

'Willy-nilly Deployment'

Running headlong into consolidation without fully understanding the technology involved and its requirements is a good way to doom a project from the very start. "Most mistakes I've seen are made when someone goes out and buys a couple copies of virtualization software, implements two servers and then just starts migrating things onto them — I call it willy-nilly deployment," says Nessen.

He says that the key to an optimal virtualized environment is component compatibility and the use of widely recognized standards. "The biggest success is when you standardize your



Smarter technology for a Smarter Planet:

It's time to ask smarter questions.

What exactly does a benchmark mean? For the last five years, IBM DB2® on Power Systems[1] has ranked first on three of the industry's leading performance benchmarks, longer than Oracle and Microsoft combined. But is that the best way to think about the possibilities of technology? What really matters isn't some abstract measure of performance, it's what companies actually do with that performance. For instance, Globe Telecom is using a service delivery platform from IBM to increase their sales by 112%. EuResist is using an integrated analytics solution to predict the most effective drug combinations for individuals with HIV, with 78% accuracy. And CAIXA Econômica Federal, one of the largest banks in Latin America, is using a service oriented architecture to slash infrastructure acquisition costs by over $330 million. On a smarter planet, these are the benchmarks that matter.

A smarter business is built on smarter software, systems and services.
Let's build a smarter planet. ibm.com/questions

1. Based on number of days of performance leadership for the TPC-C, TPC-H 10TB, and SAP 3-Tier SD benchmarks between June 1, 2005, and June 1, 2010. For more information, see http://www.tpc.org and http://www.sap.com/solutions/benchmark. TPC, TPC-C and TPC-H are trademarks of the TPC. IBM, the IBM logo, ibm.com, DB2, Power Systems, Smarter Planet and the planet icon are trademarks of International Business Machines Corp., registered in many jurisdictions worldwide. Other product and service names might be trademarks of IBM or other companies. A current list of IBM trademarks is available on the Web at www.ibm.com/legal/copytrade.shtml. © International Business Machines Corporation 2010.

hardware platform and your software environment as much as you can — the same hypervisors, the same underlying hardware and all those pieces," Nessen explains.

Compatibility was an issue for Harvey R. Morris, president of BL&S Technologies LLC, an IT consultancy that is working to consolidate 14 physical servers to just four or five. The initial strategy called for an existing server to back up a new virtualization server, but that turned out to be impossible. "The [old] server was not 64-bit-compatible, which can be a problem if you're running a 64-bit operating system on the new server," Morris says. Fortunately, the mistake was caught in time and a different, compatible system was used.

Eric Mynster, IT operations manager at Mercy Memorial Hospital System in Monroe, Mich., says he was able to gather insight from colleagues at several other area health care facilities. "We talked to three or four hospitals ahead of time and learned some important lessons from them," he says.

The two best tips he got: Use virtualization migration software, and use portable storage technology to quickly and conveniently move data from remote servers to the organization's on-site systems.

A Little Bit of Luck

Mynster feels he was lucky because his project began just a couple of months after the other hospitals had completed theirs. "So we already knew the pitfalls, and we wrote our plan around that," he says.

Meanwhile, he worked to ensure that older servers would be up to the job. "About 50 of the servers were anywhere from three to 10 years old," Mynster says. "Anytime you're talking about moving hardware that's been in place for 10, nine or eight years, you get nervous."

SERVER PROJECTS REQUIRE Homework

Five steps to planning a successful server-consolidation project:

1 **BEGIN WITH RESEARCH.** Having a solid understanding of the various consolidation techniques and technologies will help you pinpoint the approach that best meets your needs.

2 **SET OPERATIONAL AND FINANCIAL GOALS.** Identify exactly what you hope to accomplish in terms of scope, performance and costs before you begin designing the system.

3 **CREATE A SCHEDULE.** To minimize disruption to everyday business and IT operations, set a timeline with defined benchmarks. Be sure to build in some extra time to accommodate inevitable project setbacks.

4 **PUT IT IN WRITING.** A document describing project goals, system design details, integration specifics, server management responsibilities and other key points will help you, your team and external partners stay on track.

5 **BUILD SUPPORT.** As with any major IT project, getting buy-in from stakeholders is essential for a successful consolidation initiative. Make sure your business users understand the benefits, and potential pitfalls, of virtualization.

– JOHN EDWARDS

Before the changeover, half of Mercy's 200 servers were located on-site, while the other half were based at a third-party vendor located more than an hour away from the hospital. Mynster used Novell Inc.'s PlateSpin Migrate to convert and transfer data stored on the 100-plus servers located at its hosted server vendor to its in-house data center. A consolidation ratio of 18:1 allowed the on-site servers to absorb the extra load with no problems.

The software allowed Mercy's systems integrator, C/D/H, to effectively virtualize the servers ahead of time. The firm captured the remote server images onto USB storage, ran them through a synchronization process and brought the new machines live before the off-site servers were disconnected. The approach gave Mynster and his team the time they needed to check for any lurking operational glitches.

The process "allowed us to do a very fast migration," Mynster says. The work — from finalization of plans to implementation — took just under three months.

Not paying attention to error logs and other system-generated clues is perhaps the biggest postdeployment mistake made in consolidation efforts. Latrell says his shop once had to deal with an incident involving that type of oversight.

"We have lots of little programs that send e-mails out; some of those programs stay asleep for months at a time," he explains. One of those routines wasn't correctly updated during the virtualization conversion. "Somebody had used the domain name for the name of the server, and we didn't see it," Latrell says. One day, the routine woke up and began sending e-mail that was undeliverable. "It showed up in the error log," he recalls.

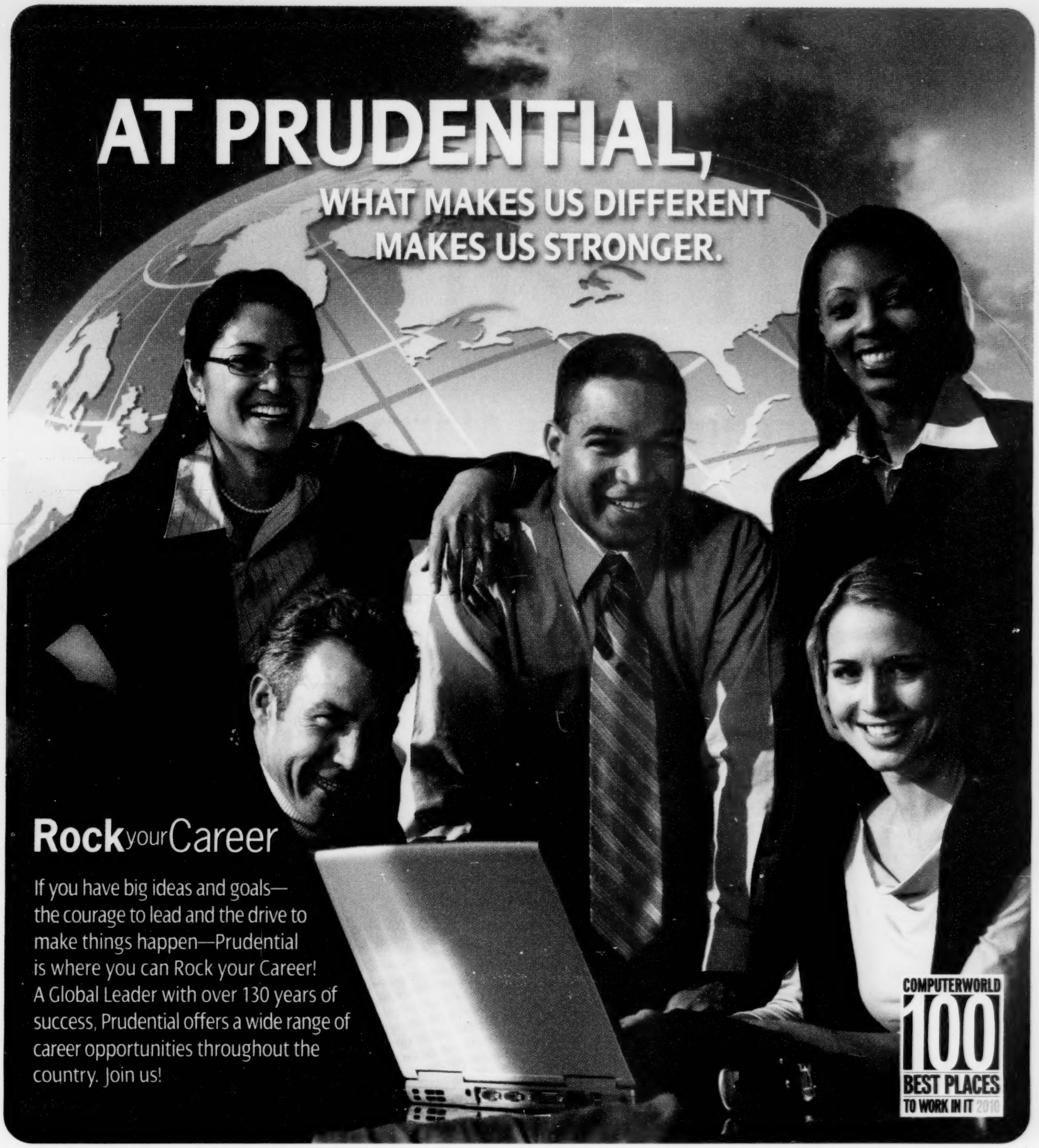
The problem was easy to fix. "We went into the code, found the problem, pointed that particular set of code to the new server and then located all the mail that went out from that particular process and re-sent it manually," Latrell says.

With fewer servers in play, many enterprises make the mistake of cutting back on support and backup technologies when they should actually be reinforcing their safety nets.

"When you've got 10 machines running on a single physical machine, that power supply really needs to be at a good level and your cooling needs to be right," says Steven Meek, president of The Fulcrum Group Inc., a systems integrator in Keller, Texas. "There are a lot of foundational things that need to be in place before you consolidate your servers."

Finally, Latrell says that even as he worked to avoid mistakes, he kept one basic thought in mind: "If there's trouble, I'm the one the boss talks to. The buck stops here." ◆

Edwards *is a technology writer in the Phoenix area. Contact him at jedwards@gojohnedwards.com.*



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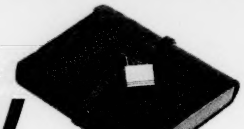


Security Manager's Journal

MATHIAS THURMAN

E-mail Shortcut Sounds Alarm

A look at the company chat board leads to the discovery that employees are getting around the VPN.

SURPRISES OFTEN dictate where I focus my attention. And what makes a surprise a surprise, of course, is that you never know where the next one will come from. This week, it was the company chat board.

Our chat board, which is part of the company intranet, draws a fair amount of employee input, covering everything from advice on international travel to ideas about innovation and technology. We don't have a formal process for moderating these discussions, but I like to check in when time allows. Unfortunately, time doesn't allow often enough. And when I logged on the other day, I found a days-old posting describing a way to configure a Microsoft Outlook client to download corporate e-mail without using VPN software.

My face flushed; I knew immediately we had a problem. A couple of years ago, I had asked the Exchange administrator to disallow RPC over HTTPS, which is the only way to do this work-around.

RPC over HTTPS, although secure in transit, doesn't provide for encryption at rest, and that puts our company data at risk. I'm never happy about that.

The only exception to our remote-access requirement of two-factor authentication and VPN is the use of Microsoft Outlook Web Access (OWA) when outside the corporate network on a shared machine — at an Internet kiosk, for example. I would rather not have this exception, but our budget at the time made buying an additional 2,000 tokens impossible. Still, I'm generally comfortable with this arrangement because the only way e-mail could remain on a shared system once an employee closed the browser would be for the employee to save it to the local PC, which is an extra step that seems unlikely to be taken.

JOIN IN the discussions about security! **computerworld.com/blogs/security**

The discovery of the VPN work-around led me to take a closer look at our mail configuration, and I found out that our firewall allows for outbound POP (Post Office Protocol) and IMAP (Internet Message Address Protocol). That means employees can use their Outlook clients to receive mail from other accounts, such as Web mail. There are huge risks with this. For one thing, any mail entering our network in this way would bypass our spam filters, opening us up not only to more spam for that user, but also to phishing expeditions and other threats. In addition, we can't guarantee that the external mail server being used by the client is not used by spammers as a relay server. That could land our company on a blacklist. And finally, if an employee used the secure version of these protocols, we wouldn't be able to scan the content of the e-mails with our data leak prevention software.

> I found a days-old posting describing a way to download Outlook mail without the VPN.

Trouble Ticket

» At issue: Employees can use RPC over HTTPS to get their corporate e-mail remotely without using the VPN.

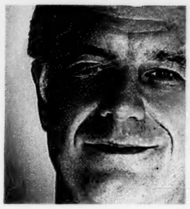
» Action plan: Shut this back door, but first check for any negative consequences.

What Now?

I have some work to do. The simplest thing would be to just turn everything off, but that's not something I would do without checking the consequences first. Therefore, I must determine whether there are any legitimate business users for both the RPC/HTTPS and the POP/IMAP protocols. (I've already learned that several of our executives who serve on other boards of directors use POP/IMAP to download that e-mail into their clients.) Once I've done that, I can deal with any exceptions and send out an announcement about the termination of these two dubious features. That probably won't make me very popular, since these features are considered productivity enhancement tools.

On the other hand, because our company's financial situation has improved, it could be a good time to revisit the possibility of configuring two-factor authentication for OWA. I also plan to ask Microsoft if RPC over HTTPS can be secured to prevent untrusted or unauthorized PCs from downloading corporate e-mail. ◆

This week's journal is written by a real security manager, **"Mathias Thurman,"** *whose name and employer have been disguised for obvious reasons. Contact him at mathias_thurman@yahoo.com.*



OPINION

BART PERKINS

Have You Mapped Your Data Today?

ARE YOU connecting your data to a map? You should. Attractive and easy to understand, map-based presentations often make patterns more obvious than charts and graphs do. Many organizations are discovering the power of geographic information systems to incorporate location-specific data into effective visual presentations.

> Can your data be mapped? It's estimated that 95% of all data contains geographical references.

Recently, I learned that 20 years ago specialists were asserting that 80% of all data contains geographical references. That sounded high, so I asked Stuart Hamilton, GIS program director at the College of William and Mary, to clarify. His estimate: 95% is more accurate today. New technology is partially responsible, including cell phones, GPS devices and electronic toll collectors.

Government users pioneered GIS for monitoring lot boundaries, water run-off, population movements and more. GIS is widely used to coordinate evacuations and emergency supplies and monitor the spread of diseases, among other things.

On the business side, distribution companies have used GIS to monitor and manage their fleets for years. Energy companies have used seismic data to determine drilling locations. And for consumers, mapping software has been combined with location-based information to create easily understood maps that can show everything from the air quality in certain areas to the locations of public restrooms, high-crime zones or Kentucky's bourbon distilleries — the possibilities are endless.

If you think GIS has a place in your business, prepare to address challenges like these:

- **GIS increases IT demand.** GIS will enable new capabilities in most industries. Examples abound. The American Printing House for the Blind is developing an in-home GPS for blind people. And as users comprehend the power of GIS, they demand more GIS-related services.
- **Data volumes grow rapidly.** GIS requires a location tag for each data point. Many organizations start with ZIP codes, but GIS usually demands more precise locations: longitude, latitude and elevation. Many GIS applications also require time stamps for every measurement.
- **New expertise is required.** I always thought longitude and latitude were constant. They are, as long as you know which type you're using. There are literally thousands of mapping approaches; a GIS needs to specify the data standard used. Moreover, the widely used World Geodetic System is updated periodically, so data must specify a version: WGS 1984, WGS 1972, etc. State and local governments typically use the much simpler State Plane Coordinate System, which ignores the curvature of the Earth but is accurate for local use. GIS programmers must learn geospatial concepts and choose among specialized development environments and spatial data management systems.
- **GIS can be expensive.** You need new data, tools and skills. Open-source tools and free geospatial data are adequate for creating a Google Maps mashup or for piloting business projects. But most organizations find that effective GIS requires more granular (and often expensive) data. Finally, GIS programming is highly specialized. A developer typically requires significant training to become productive.

It's easy to plan for tomorrow's weather by watching The Weather Channel's progressive weather map. Businesses will soon use similar maps to analyze and predict where their customers live, work, shop and travel. Your competitors will use GIS soon. Don't be the last company to adopt this valuable technology. ◆

Bart Perkins is managing partner at Louisville, Ky.-based Leverage Partners Inc., which helps organizations invest well in IT. Contact him at BartPerkins@LeveragePartners.com.

Career Watch

Q&A

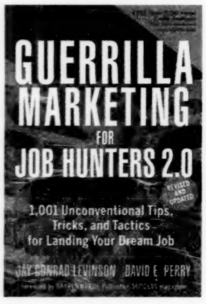
David Perry

The co-author of **Guerrilla Marketing for Job Hunters 2.0** *explains how an unconventional search strategy can result in a new position in a third the time.*

Is there one thing job hunters can do that would shorten their searches?
Stop looking for jobs. Start looking for employers and influencers. Pick a list of 10 to 20 companies where you want to work. They're not hiring? Doesn't matter. The one-word cure for "hiring freeze" is attrition. People get fired, laid off, quit or die every day, even at companies that aren't hiring. When you focus your efforts on a short list of target companies, you will make connections that lead to meetings that lead to employment.

How can technology be better utilized in the job search?
There are 4 million HR managers and 174,932 professional recruiters in America today. The first place these recruiters will go to find a potential candidate is ZoomInfo.com. The second is LinkedIn. If you don't have a profile, you can't be found – in fact, you don't exist. By creating a profile, you are basically putting your résumé on the Web. Better yet, ZoomInfo will update your profile with new career info whenever it appears on the Internet.

Online tools can also be helpful in focusing your job search. FreshContacts.com is a free, downloadable plug-in for Microsoft Outlook that gives job hunters unfettered access to intelligence on 45 million executives. Using FreshContacts.com, it is simple to put together a list of the companies you want to work for and the e-mail or phone number for the vice president or department head that is doing the hiring.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JAY CONRAD LEVINSON DAVID E. PERRY

Once you have identified your target employers and influencers, Google Alerts can notify you when there's a reason to call, such as a significant event involving a company or one of its executives.

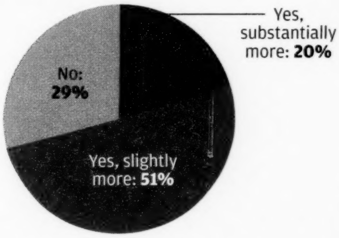
What are some examples of guerrilla mar-

Continued on next page

IT Hiring Could Be Headed Up

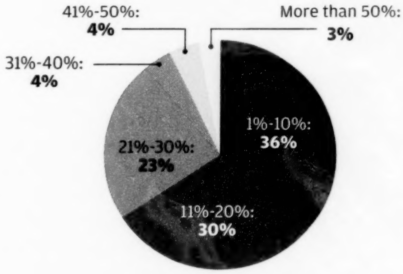
Unemployed technology professionals are certainly due for a break, and one may be coming to many of them later this year. Dice.com surveyed more than 600 human resources managers and professional recruiters from across the U.S. in May and found that a majority expect to hire substantially more technology professionals in the second half of 2010.

Do you expect you or your clients to hire more technology professionals in the second half of 2010 than were hired in the first half?



What constitutes "substantially more"? While 36% of those who expect more hiring said the increase could be as little as 1% or as much as 10%, more than half (53%) cited an anticipated increase in hiring of between 11% and 30% in the second half compared with the first.

By what percentage do you foresee the number of IT professionals that you or your clients employ increasing from the first half to the second half?



In a bit of good news for laid-off workers (but not-so-great news for recent graduates), much of the anticipated hiring will be for jobs that require two or more years of experience.

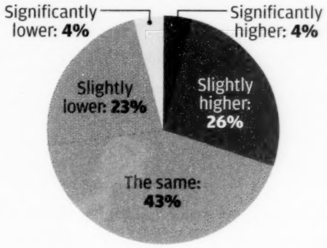
For what level of experience do you expect to hire in the second half?

Entry-level	16%
Two to five years of experience	52%
Six to 10 years of experience	60%
More than 10 years of experience	29%
Don't know	8%

Note: Multiple responses allowed.

As for salaries, not many employers are paying new hires significantly more than they did last year, but those saying they are paying them "slightly more" rose to 26% in the May survey, up from just 8% in a November 2009 survey.

What trend do you currently see in salaries for new hires compared with one year ago?



Finally, 66% of respondents said they think layoffs at their companies or their clients' firms are "not likely." That's up from just 37% who said the same in November 2008. And while 25% said they expect hiring to return to more normal levels in the first half of this year, the largest percentage of respondents said "Not sure – we'll have to wait and see how the economy evolves." Still, that 31% figure is down significantly from a recent high of 52% in May 2008.

Continued from preceding page

keting? Career experts claim that only 20% of open positions are posted online. Guerrilla job hunting is about targeting the other 80% of jobs. Unfortunately, most people still focus on applying for advertised positions.

To crack the hidden job market, a person needs creativity, focus and persistence. Guerrilla job hunting is about engaging your audience and surprising them. It can take the form of an educated and targeted phone call, developing a guerrilla résumé that includes full-color graphics and testimonials from past clients and managers, or something as bold as the coffee cup caper.

What is the coffee cup caper? And has it really helped anyone get a job? It's literally a job in a box. The ingredients are simple: a full-color guerrilla résumé, with logos and quotes from past employers; a paper Starbucks cup; and a cover letter that asks, "Could we meet for coffee to discuss how I might help you?" You send it in a FedEx box. Does it really work? Ask Mark Thomas, the systems admin from Mesa, Ariz., who started his new job on March 8. He got so many interviews that he had to stop after sending 10 coffee cup capers to employers.

Will guerrilla marketing help someone working in IT land a job, such as a programmer or a systems administrator? Absolutely! Technology professionals are probably better suited for guerrilla job-hunting techniques because they already have an understanding of the networking and collaboration tools from companies like Google, LinkedIn, Twitter and ZoomInfo. As the above example describes, the most important thing about looking for a job in today's intensely selective and competitive job market is to target your search, leverage your network and be bold. These three things will shorten your job search regardless of your field of expertise or specialty.

– JAMIE ECKLE

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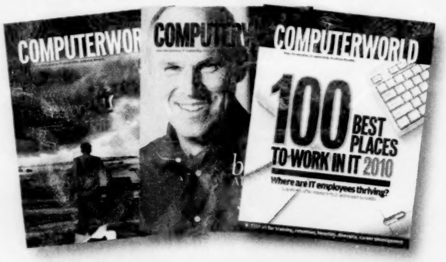
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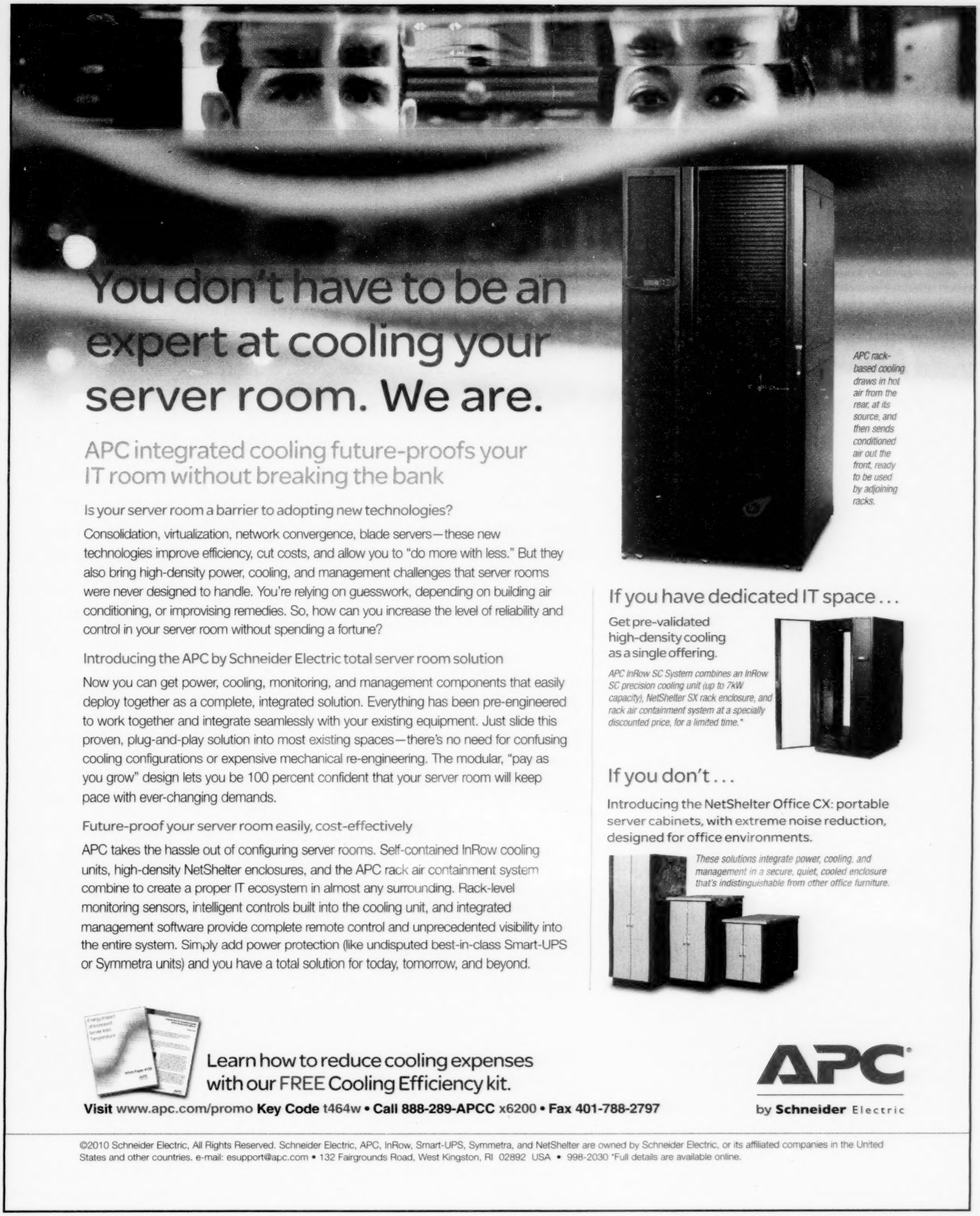

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San Jose, CA:
Imaging Scientist (job code: IS1). Working closely with R&D engineering teams to develop a variety of image-processing enabled devices.

Mail resumes to 3080 N. First Street, San Jose, CA 95134, Attn: GS/HR. Must reference job title and job code to be considered. EOE.

INTERDYN – Progressive Group seeks Senior Dynamics GP Developer to work in Houston, TX to: design systems and develop program coding, develop high-end custom software for Microsoft Dynamics GP using Visual Studio.NET, Visual Basic for Applications and SQL Server tools, add new data tables and interact with the existing table structures in Dynamics GP, and use knowledge of and experience with eConnect and heavy SQL Server 2005/2008. Candidate must have bachelor's degree plus 5 years experience in job offered or related experience. Submit resume to Bryan Wilton at bwilton@progrp.com. Must put job code GP2010 on resume.

Consolidated Graphics, Inc. seeks Sr. Network Engineer to work in Houston, TX for development and maintenance of network communication. Candidate must have 6 years experience as a Network Engineer/Network Administrator. Submit resume to David DeGendt, IT Director, at ddegendt@cgx.com. **Must put job code SNE001 on resume.**

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Ascendant Technology, LLC in Austin, TX seeks a qualified Senior Consultant to design and develop J2EE e-commerce based applications for production of web-based systems and implement WebSphere Commerce Development using WebSphere technologies. Send resume to: Human Resources Manager, 16817 167th Ave NE, Woodinville, WA 98072. **Must put job code ATL320 on resume.**

Felix Health Technologies seeks software engineers, programmer analyst, DBA to customize applications using skills per project requirement. Min is MS or BS with IT experience. Some positions require travel. Send resumes to careers@felixhealth.com.

Corporate Computer Services seeks System/Programmer Analysts, DBA, S/W Engineers using skills C/C++, VB, Oracle, etc. Min MS/BS+1-5yr IT exp. Some positions require traveling. Apply HR@ccsiusa.net. EOE.

Meridian Technologies seeks System Analyst, DBA, S/W engineers using Oracle, SAP, SQL, Java, etc. Require MS or BS with 1-5yr IT experience. Travel required for some positions. Please contact jobs@meridiantech.net .

FutureTek is looking for program/system analysts, DBA, software engineers. Require MS or BS with 2-5yr experience. Some positions require travel. Send resume to 28345 Beck Road #101 Wixom MI 48393-4733

Lead Technical Architect needed w/exp to dsgn, dvlp & deploy Web applics using ATG applic framework over JBOSS/WebSphere applic servers. Mail resume to REV Solutions, Attn: C. Simich, 10400 Viking Drive, #110, Eden Prairie, MN 55344.

Visual Consultants Inc is seeking a DB2 Datawarehouse Architect to work in New Hope, MN. This Architect is responsible for defining and driving information and data warehousing strategies for Business Intelligence Systems in a DB2 Warehouse environment. Applications to Bala Akkina, Vice President, Visual Consultants, Inc. 4900 Highway 169 North, Suite 307, New Hope, MN 55428.

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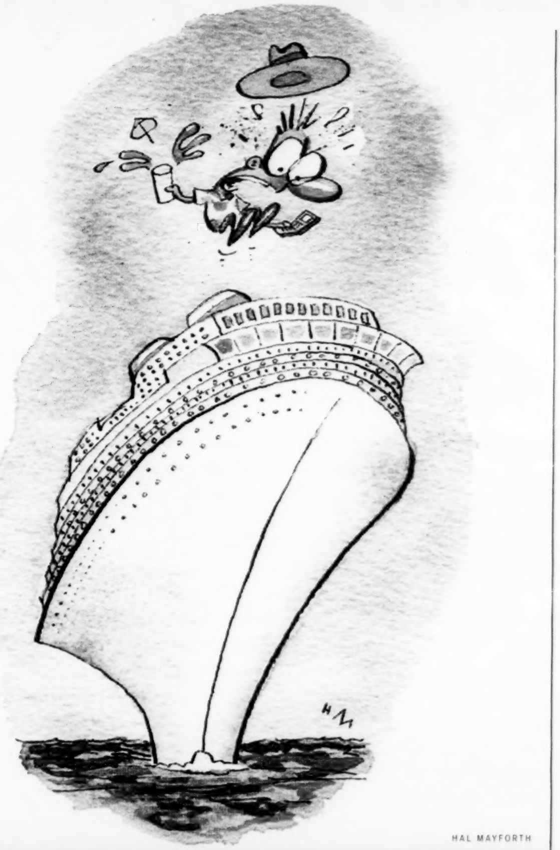

HAL MAYFORTH

Virtually Impossible

User calls this help desk pilot fish complaining that he can't connect to the company network via VPN. "The user was full of bluster, telling us how many millions of dollars of sales will be lost if he isn't able to connect in and send a vital e-mail," says fish. "We tried many, many different debugging techniques, to no avail. Finally, one of the techs came up with the right question: 'What network are you connecting to?'

Turns out the user was on a cruise ship in the middle of the Caribbean. We have a 500ms timeout on successful key negotiation, so satellites are out of the question. I jumped on the call to relieve the tech who was trying to stifle his laughter, and offered the user payment on his next mai tai."

Just Don't Anybody Tell the Bank, OK?

This small vendor provides software to a big bank that happens to be far away – and supporting the installation 24/7 turns out to be a challenge. "The bank has given us a log-in account and a security token – one of those little doohickeys that changes numbers every minute," says a pilot fish on the support team. "But we've got three support people and only one security token. We put in a request for more accounts and tokens, but the bank moves at the speed of a very large corporation, so that wasn't going to happen anytime soon. After a few attempts at 'passing the baton' during the weekend, along with a few early-morning wake-up calls along the lines of 'Hey, can you read me the number off the doohickey?' one of our engineers came up with a solution. We set up a webcam in the office and pointed the camera at the security token. Now the folks on support can log into our network, access the webcam and get the number on the token. As long as the webcam stays up, we're golden!"

Details, Details

This tech goes on vacation – something his co-workers dread. "Problems always arise when he leaves," says a co-worker pilot fish. "And so it happened: We have a computer gathering data on all outgoing phone calls in our company. The operator noticed that there were no new records that week and called us." After a half-hour of struggling amid the jungle of cables, fish finally calls the vacationing tech, who explains that they just need to plug the dark-gray cable into the computer. Fish looks – but all the gray cables are the same shade. "After scratching our heads and telling him that we could not find it, we noticed a lonely *red* cable. We plugged it in and *voilà*! Everything was back to normal. That's when we remembered that he was colorblind."

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1&1 Internet 1and1.com	11
APC by Schneider Electric apc.com/promo	29
dtSearch dtSearch.com	28
Eset eset.com/business_trial	7
Hewlett-Packard hp.com/networking/change	C1, C4
IBM IT Non-Intel ibm.com/questions	17, 18, 19, 21
IT WatchDogs itwatchdogs.com	28
Prudential jobs.prudential.com	23
Qwest qwestsolutions.com	C3
Sprint sprint.com/convergence	C2
Stratus Technologies Computerworld.com/whitepapers/Stratus	9
University of Maryland umuc.edu/mychallenge	27

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OPINION

SCOT FINNIE

The Rise of Consumer Tech

HOW IS YOUR company handling the rising tide of consumer smartphones, like the iPhone?

I've asked that question of a lot of IT professionals over the past couple of years. Here's one response: "We're fully behind the iPhone at my company. We're replacing BlackBerries where and when we can. The iPhone user experience trumps [our IT] management concerns. We make it happen for the ones who want it." But I've also heard the contrasting view, the one you might sum up as, "We have our users so locked down, we don't worry about the iPhone or its ilk."

IT pros who answer either way underestimate their users or the degree of trouble multiple types of half-secured consumer devices can get them into. You may be handling it now, but how about when your employees dump their desktops for their own iPads or similar devices? How about when the numbers really mount? Have you kept pace with the number of smartphones being released? And many users have two or three of these devices.

The consumerization of IT is becoming a landslide, big enough to have its own acronym — I nominate "CoIT." But I'm not sure many enterprises are all that aware of it.

The consumerization of IT is becoming a landslide, but I'm not sure many enterprises are all that aware of it.

Computerworld recently ran a story about an Exchange ActiveSync issue that apparently causes Apple's iPhone 4, or any device running Apple's iOS 4 mobile operating system (the iPad will get it in September), to bang on the Exchange server if it can't get synced right away. Server admins are not going to like that. And I don't really need to lay out for you all of the more profound security and compliance issues.

So IT organizations need to think this through. Larger enterprises with thousands of employees are absolutely going to need help, whether it's homegrown or an enterprise application such as Sybase's iAnywhere or BoxTone's Mobile Service Management. The time to think about this is now. Mobile devices have matured, and they offer significant advantages to their users. Have you even figured out what the potential dangers are for your company?

Most IT organizations don't have a lot of information about the usage of consumer devices in their midst.

CoIT is being driven by the arrival of increasingly useful mobile technologies and the persistence of the economic downturn, which has pushed people to work longer hours and merge their professional and personal lives. But CoIT isn't just about mobile devices.

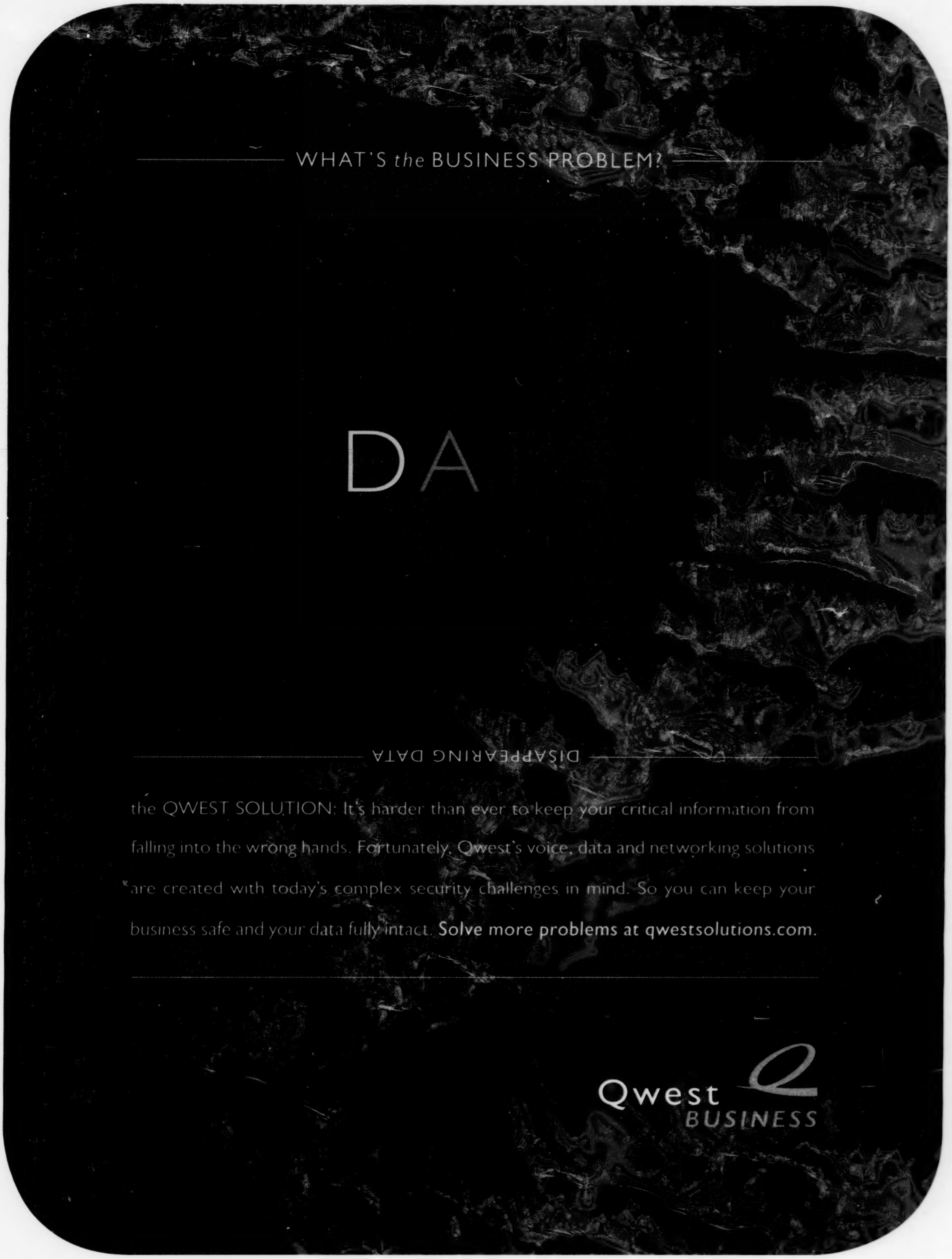
The rise of interest in Web 2.0-based social tools for business use (also known as Enterprise 2.0) is in many ways a sister trend. Business people are weary of complex, monolithic software. They want lightweight, Web-based tools that echo the feel, and even sometimes the purpose, of social media apps like Facebook, LinkedIn and Twitter. They want to blend personal and professional communications because it's all about multitasking. They want slick devices that unify all aspects of their lives. And they want to be able to use that software on their devices for business and personal needs wherever they go. No limits.

Think the iPad has no business use? I expected that to be so, but I was wrong. I'm hearing that many enterprises have hundreds of iPads that they know about being used for business purposes. For example, the iPad is an excellent presentation tool: Hand it off to your prospective customer, and he's in control.

CoIT is an accidental revolution, a change in the way people work and the IT-related tools they use. After 20 or so years of iteration, smartphones have stopped being the product of too much compromise. At the same time, more and more business is conducted by simple apps running in the cloud or on your smartphone (or both). All this is potentially a lot less under your organization's control than most business activities used to be.

Like many end users, I have an iPad and an iPhone 4, and I'm not giving them up. There's a lot for IT to figure out. ◆

Scot Finnie is *Computerworld's* editor in chief. You can contact him at sfinnie@computerworld.com.



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1. Respondents from Infonetics September 2008 survey report that Tipping Point blocks 2.3x more threats compared to next-closest competitor
2. Based on line rate comparison between HP 12518 128x 10G (2.2 Bpps) and Cisco Nexus 7000 Series 18 (960mpps)
3. IDC white paper sponsored by HP, *ROI of Switched Ethernet Networking Solutions for the Midmarket*, #219843, August 2009